ABSTRACT


With data from the National Longitudinal Survey of Youth (NLSY), the present study examines the effects of reading deficiency on delinquency through a series of OLS regression models. Data are drawn from the NLSY and reflect a sample size of 1,262. While the effects of IQ have been analyzed extensively in the literature, less attention has focused on the potential harmful effects of reading deficiency. This study builds on previous work, and includes several assessments of “academic” measures including IQ, reading comprehension, and digit span (sequencing ability) within the same model. Findings indicate that the addition of a variable measuring reading deficiency contributes to the prediction of delinquency. To further investigate the statistical relationships, interaction terms involving social, physical, human and cultural capital are tested. A path analysis is also conducted and reveals that reading deficiency could be also considered as a mediating variable between various exogenous factors and delinquency.
READING DEFICIENCY AND DELINQUENCY: INTERACTIONS
WITH SOCIAL, PHYSICAL, HUMAN AND CULTURAL CAPITAL

by

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Doctor of Philosophy

Sociology

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BIOGRAPHY

Each of my degrees has been guided by an interest in Criminology. My undergraduate degree in Criminal Justice was chosen primarily because of my desire to “fight crime” and “make a difference in the world”. However, after working in the CJ field, I soon realized that the answer to reducing crime and suffering is not by employing more “soldiers”. The true sources of the problems are deeply embedded within the structure of American society. This enlightenment has led to an interesting and productive journey through graduate school. While the search for answers continues, I believe that through the combination of my various degrees, I have benefited tremendously by reducing my probability of looking at the world through blinders. While criminology has been the theme through all of my degrees, the variation in subject matter affords me the opportunity to be more equipped to pull back some of the layers of meaning that compound relevant issues in the field.

My first Masters degree, a Master of Public Affairs, for example, assisted me greatly in understanding the political realm in which decisions are made. It was my second masters degree, a Masters of Science in Sociology, however, that has given insight into why and how outcomes emerge and what drives the decision making process, for example.

The course work on the Ph.D. has been extremely beneficial to me, but it has been the process of completing the dissertation that has challenged me the most; while at the same time benefited me the greatest. My chair, Dr. William R. Smith, has challenged me to do things quantitatively that I did not think I was capable of; with his direction, I finally know I have earned the right to receive a doctorate. While the work in this dissertation has been very demanding, it too has been a necessary and productive journey for me.
ACKNOWLEDGEMENTS

When deciding on methodology appropriate for the research topic of interest, it
became apparent that tests for interactions needed to be conducted. A review of the
literature indicated that while testing for interactions is important and has potential
contributions to the field; researchers seldom report testing for them. As the current
analysis advanced, it became apparent to me why testing for interactions are not as
common as perhaps they should be, especially in regards to path analysis. Interpreting
the results are challenging and very time consuming. One has to be very patient and
pay meticulous attention to detail. Had it not been for the direction of Dr. William R.
Smith, this Ph.D. candidate would have been in a constant state of disarray and the
dissertation would not have likely been completed as originally planned. With his
guidance, I have learned so much more than I thought I could and interaction effects are
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INTRODUCTION

This study investigates if reading inefficiency is an important consideration in explaining crime and delinquency. More specifically, this study tests hypotheses about whether common predictors of delinquency are mediated by reading deficiency. The influence of various forms of “capital” will also be considered. This is investigated through standard OLS regression analysis in which tests for interactions are performed. In addition path analysis is used to show how various theoretical concepts are mediated by reading inefficiency in the explanation of delinquency. Criminological research acknowledges the importance of academic failure; but the influence of “literacy” is minimized in the shadows of overall academic acquisition and IQ, as explanations for delinquency (however, see Brunner, 1993). Although interaction effects involving various combinations of human, social, and cultural capital have been reported in the literature, they still remain relatively uncommon (Jaccard et al., 1991).

In the present study, human capital is operationalized as not only the intelligence of the child (as measured by IQ) but also the ability to read. Cultural capital reflects exposure to cultural opportunities, physical capital reflects the income level of the family of the child (here physical capital is rather weakly measured in terms of the social deprivation of the neighborhood rather than the family income). Social capital reflects the bond and level of communication between parent and child as well as the level of social organization of the neighborhood.

There are many traditional criminological theories relevant to the explanation of delinquency: many of them have at their core issues of capital accumulation or capital deficiency (where capital refers to all those just mentioned above). Several forms of capital will be statistically analyzed to determine their level of explanatory power on delinquency. While direct connections to the standard forms of capital such as physical,
cultural, human and social, are not always clearly identified as such in the criminological literature, inferences can be drawn from most of the traditional theories. Strain theory, for example, suggests that physical capital is a central component to understanding illegal behavior; other social class theories, including relative and absolute deprivation, alludes to physical capital issues as well. Cultural Deviance theory suggests that issues of cultural capital are important considerations and that culture varies by class position. Social learning theorists imply that the dynamic relationship of “learning from others” is an important factor, and that cultural capital advantages in the family are likely to vary, based on race, ethnicity and social class. In the Inequality literature, a lot of work has addressed the fact that the response from teachers may be better if the child’s level of cultural capital is high or at least average. This in turn can convert to a more rewarding school experience for the child. If the school experience is negative, delinquency may be more likely; therefore variation in cultural capital may be an important consideration in delinquency models. Control theories, such as social bond, are suggestive of the importance of “relationships” which imply social capital. When bonds are weak, delinquency is more probable. Much work by Sampson and Laub has emphasized social capital in terms of changing familial and other institutional involvements that can push and pull individuals into and out of criminal behavior. One branch of theory in criminology, social disorganization theory, also emphasizes another form of social capital, the degree of collective efficacy in the neighborhood. And lastly, traditional theories such as self control, the influence of personality, and biological traits have, at their core, issues of human capital (human capital usually refers to knowledge or intelligence but can be extended to include self regulations and biological predispositions). If opportunities are blocked because of deficiencies in human capital and individuals are less able to do well in school, obtain degrees, obtain good jobs and
secure positive relationships, then the “path” to delinquency and criminal behavior is a more probable journey for the individual.

Basically, one could evaluate most traditional criminological theories and suggest that each has at its core some form of capital “deficiency,” although there may be debate at times as to which form of capital is being measured or conceptualized by which theory. Also methodological concerns are apparent because the forms of capital are often intercorrelated and interrelated causally. But hopefully the reader accepts the argument thus far presented that the theoretical justification for analyzing various forms of capital in the explanation of crime and delinquency is well grounded in the literature. Choosing only one theory to serve as the backdrop of this analysis is not well suited to this fact. However, if any one theoretical approach had the ability to effectively tie all of these forms of capital together, it is the concept of cumulative disadvantage. According to this concept, in general there is the expectation that a deficiency in one type of capital is often correlated with deficiencies in other forms of capital. For example, the poor, less intelligent child is often the child attending less rigorous academic institutions. Deprived of “equal educational opportunity” this same child is less likely to have the extensive social connections for the better jobs, and may be discouraged to think he/she has “little to lose” by deviant or delinquent behavior. While the present dissertation does not follow the same individual over an extended period of time, with re-interviews of the same subjects, it is argued here that the findings are relevant to research that formally studies such processes.

The primary theoretical position in this dissertation is consistent with developmental approaches in criminology, with added emphasis on how traditionally studied forms of capital (social, physical, cultural and human) interact with one another and are in part determined by exogenous variables. However, the current study is not a longitudinal study, in the usual sense of the term because the same individuals are not
studied repeatedly over time. However, the same individuals have different measures made of them at different points of time and thus there is time ordering among some of the variables. For example, all of the “capital” variables are measured for a period of time prior to delinquency.

At a broad theoretical level, when an individual is disadvantaged in multiple forms of capital a “snow ball” effect is more likely with outcomes including increased delinquency, criminal behavior and eventual incarceration. Stated another way, the individual is increasingly “relatively deprived” compared to the child who starts out from an advantaged position. The effects of disadvantage may accumulate in something greater than an additive fashion: interaction effects may be present that accelerate the likelihood of an undesirable outcome or further a disadvantaged result. For example, those weak in human capital (intelligence) may be more likely to be delinquent if they also suffer from weak social capital such that they have a greater propensity for delinquency than reflected in the additive unconditional effect of IQ and social capital often reported in the literature. That is, the effect of social capital may condition or modify the effect of IQ or reading ability: accelerate the presumed negative effect of IQ/reading ability on delinquency. This work is focused primarily on measures of human capital and how variables that influence delinquency may actually be moderated by the levels of other variables.

More specifically, for the current research project, it is easy to substantiate theoretically, based on principles of traditional criminological theories, that forms of capital are part and parcel of the traditional criminological concepts associated with delinquency. It is also being suggested here that forms of capital are also connected to reading comprehension success (itself a form of human capital), and that, in general and consistent with cumulative disadvantage theory, delinquency should accrue disproportionately to those weak in a multitude of capitals. That is, since these variables
are likely to interplay with one another, it is important to test for interaction effects. A variable’s importance in explaining delinquency could very well be dependent on the level of another variable in the model. While interaction effects make sense theoretically, they are rarely found in the literature. This current research will include some of the basic demographic variables that have been commonly associated with delinquency, and interaction effects will be tested among the various independent variables, in their effect on delinquency as an outcome. The variables of primary focus for this dissertation, however, will be the cognitive measures of IQ and reading inefficiency (or degree of literacy—the terms “literacy” or its opposite “illiteracy” and reading inefficiency will be used here to refer broadly to the same phenomena—relative inability to read), in which reading ability is conceptualized as a continuous variable rather than as a binary outcome (illiteracy no longer refers to a dichotomous measure). The influence of one form of human capital has been more common in the literature, IQ. Another form of human capital, reading inefficiency, has not been very commonly tested in the literature.

In addition, an often-used measure of “sequencing ability” called the “digit span” test will also be incorporated into the models, and its effects tested. Digit Span is an auditory test of “working memory”- in the clinical sense of having a biologically based inefficiency in processing information, specifically the test identifies problem with short term memory. The test assesses the ability of children to remember and repeat numbers sequentially in forward and reverse order (Psychological Corporation, 1974). In the “Memory for Digit Span” assessments, the child listens to and repeats a sequence of numbers that is said by the interviewer (forward order). In the second part, the child listens to a sequence of numbers and repeats them in reverse order. Children’s scores reflect the amount of numbers repeated correctly. By controlling for sequencing ability in the models below we can test short-term memory as a competing hypothesis to reading
inability (of course, the two measures are somewhat correlated, as shown in the analysis below).

Intelligence has long been related to delinquency by social control theorists, as IQ is a known predictor of grades in school, which in turn is predictive of delinquency. Hirschi for example, finds an 8 point difference between delinquents and non-delinquents in regards to IQ. While debating the merits of IQ measures will be avoided in this dissertation, it will be briefly mentioned that in regards to IQ, scholars have focused on it as the primary form of human capital that is relevant to the explanation of delinquency. It is argued here that reading deficiency could be just as important -- or perhaps more -- important than IQ. Perhaps both cognitive measures are important.

There is extensive literature on how much of IQ is “nurture” as opposed to “nature”, and there are presumably means by which one can raise one’s IQ. It should be pointed out that reading ability may be improved through various reading programs (See Appendix A and B), and with potentially many beneficial consequences for the reading, including less delinquency.

From a sociological standpoint there are sometimes objections presented to the use of IQ as a predictor of crime. Some argue that the concept is multi-dimensional (there are multiple forms of intelligence) while others object to the use of it on “political” grounds because of troubling issues involving correlations with race. Such issues will also be largely ignored here (although race will be discussed later). Rather, IQ will be treated as an exogenous variable, possibly impacting forms of capital, and delinquency itself. It is argued here that reading ability, independent of IQ is worthy of our attention. Reading ability is a quality for which we are primarily judged in the schooling process, but it is also important in the world outside of school. It is possible that our ability to read -- rather than our IQ level -- is a better predictor of delinquency. It is speculated in this study that poor reading ability may result in frustration, rejection and rebellion and may
be more connected to serious forms of delinquency, than is IQ. Also, in the literature on “how we learn to read” it seems that factors of inequality are important considerations. Therefore, rather than the purely micro theoretical approach of looking at one’s IQ in relation to delinquency a more macro theoretical approach is presented here when we conceptualize reading inability as determined in part by personal inability, but more importantly by factors in the social structure. If reading ability is identified as just as an important variable as IQ, then a cognitive variable has been identified which lends itself to be manipulated (through reading programs); therefore improvements in reading may possibly result in opportunities to reduce delinquency and criminal behavior. Perhaps part of the “snow ball” effect of cumulative disadvantage can be “melted” a bit. The associated cumulative effects of illiteracy can be damaging and vary related to mechanisms of stratification and may be an important consideration in explaining delinquency.

Some early reading research has identified IQ, as the only determinant factor to reading success (see O’Connor et al. 1998 for review). However, more recent research suggests the important influence of social factors (See Appendix A). If we acknowledge processes of inequality, and how they might interact and influence reading acquisition, and how reading deficiency might be a “turning point” to crime, a model of “cumulative disadvantage” becomes clearer. More so than perhaps most other subject matters, learning to read is a social process and variables in inequality are likely to influence literacy success (Schiller, 2001; O’Conner, 1998; Blackman, 1994; Clark, 1983; Vygotsky, 1978).

Learning to read begins long before the child starts school. Some children are disadvantaged early, and it can be difficult to “catch up” to those who have received more exposure prior to the school experience. When reading is not achieved in early grades academic success is less probable and frustration and low self-esteem by the
deficient reader is more probable, which can certainly lead to a greater likelihood of problem behavior. Reading deficiency can be damaging to the life course of individuals, especially in regards to teacher- peer- parent-child relationships, educational attainment, self-esteem, employment opportunities, and even marriage patterns. The bonds to these institutions have long been identified as important considerations in explaining criminal behavior. Overall, as stated earlier, while there are many criminological theories that can be used to ground this statistical analysis, the theoretical direction of this dissertation aligns most clearly with Sampson and Laub’s (1997) work whereby cumulative disadvantage, social bond and labeling processes are integrated (although no direct measure of labeling is available in the present study). Most are familiar with Sampson and Laub’s earlier work on Life Course Theory, but their more recent work is even more relevant to this paper whereby an integrated approach to other theories is suggested. Readers unfamiliar with this work should refer to the book, The Developmental Theories of Crime and Delinquency, for a complete review. This dissertation however, extends that model a bit further by demonstrating mechanisms of inequality through various venues of capital and by testing interaction effects.

Sampson and Laub (1993, 1997) draw attention to age gradation and trajectories that influence life-course outcomes. While academic and inequality issues are alluded to as trajectories they are not completely developed in detail. While such trajectories cannot be studied here either -- since our data are not truly longitudinal in the sense of repetition of the same measures at multiple points in time -- the proposed analysis here will look at the interrelationships of both academic and inequality measures. And whereas Sampson and Laub focus on the effects of cumulative disadvantage over the entire life course, the current dissertation will focus on cumulative disadvantage in the early years up to age 17. This dissertation does not assume to be a perfect test of Sampson and Laub’s work; however, the theoretical backdrop of which much of the logic
presented in this paper rests, best follows that of cumulative disadvantage and life course theory. In this work, however, more attention is given to issues of inequality and the specific trajectory noted is reading deficiency.

A key concept to be tested in this dissertation is one discussed by Sampson and Laub: the so called “Matthew effect”. A “Matthew effect” refers to a concept developed by Merton (1968) in which he documents how famous professors become even more famous because other scholars pay attention to what they say and write, making them even more famous. The term is applied by Sampson and Laub, as well as others, to other desirable traits, such as human capital. The idea is that “the rich get richer” while “the poor get poorer.” This basic idea will be the basis for testing interaction effects below in the analysis.

There is variation in one’s well being and life-course outcome depending on location in a stratified society. Researchers have devoted worthy attention to revealing the factors that contribute to a stratified society, and its related consequences. It is argued here that a very simple determinant, literacy, plays a role in the probability of where one’s place is in a stratified society; but has not been given sufficient attention. By itself reading deficiency can serve as a *turning point* and should be able to explain some of the variance in delinquent and criminal behavior. Importantly, social factors that contribute to reading variation should be considered and the interaction of these processes may provide even more explanatory power regarding delinquency. Variation in capital affects both reading ability and crime and delinquency. While issues of capital advantage or disadvantage are consistent themes in much of the criminological literature, one form of capital disadvantage, reading inefficiency, has been neglected (Brunner, 1993 is a noted exception).
**Anticipated Contributions of the Dissertation**

This dissertation will contribute to the field in several ways. First, it will further the work in “cumulative disadvantage” models by investigating how reading variation may be involved in the process. Not only will the research investigate the direct relationship that reading deficiency has on explaining crime, but it will also test for how reading deficiency serves as both a mediating variable and as a moderating variable, relative to other variables thought to influence delinquency. It will be argued that some of the same mechanisms in inequality that can influence delinquency can influence literacy. Therefore, this study will conclude with a path analysis that assesses forms of capital variation as intervening variables. As mentioned earlier there is the likelihood that the effect of one variable is contingent upon the level of another variable, so interaction effects will be tested. Moreover, it is hypothesized that the interaction effects will be consistent with the so-called Matthew effects described in general earlier. That is, those who are relatively disadvantaged will benefit less from positive capital than those who are more advantaged --consistent with the general hypothesis of cumulative disadvantage: the “rich get richer, and the poor get poorer” (or at least do not benefit as much from various forms of capital). Hence, multiplicative terms will need to be included in the modeling. It is predicted that variables may interact with one another and influence levels of capital, which in turn may explain some of the variation in delinquency.
CHAPTER ONE: REVIEW OF THE LITERATURE

The Grounding Theory:

The “developmental approaches” in explaining criminal behavior are the theoretical backdrop against which this dissertation is based. Sampson and Laub’s (1997) chapter in Thornberry’s book, Developmental Theories of Crime and Delinquency summarize life course and cumulative effects models clearly. They cite Rutter and Rutter’s (1993) definition of the developmental ideology in criminology as “systematic, organized, intra-individual change that is clearly associated with generally expectable age-related progressions and which is carried forward in some way that has implications for a person’s pattern or level of functioning at some later time” (1993:64). According to Sampson and Laub, developmental criminology is thus focused on how events set in motion dynamic processes that alter future outcomes. Clearly, reading deficiency should be viewed as triggering disadvantage that can lead to crime.

Reading deficiency could be viewed as a “static’ condition. However it should more appropriately be understood as a developmental process of “cumulative disadvantage”, a term often used in work by Sampson and Laub. According to the theorists, the idea of cumulative disadvantage draws on a dynamic conceptualization of social control and is integrated with one theoretical perspective in criminology that is inherently developmental in nature: labeling. Reading deficiency appropriately ties to both of these concepts. In essence, the struggling reader faces interactions with others that set in motion a series of events that are likely to result in a “turning point” towards delinquency.

Most predominant theories in criminology are non-developmental in nature. That is, they look at a “latent trait” or a “static” variable that is time invariant and compare non-delinquents to delinquents in a cross-sectional design (Sampson and Laub, 1992 and
A cumulative effects model however, looks at various social processes over time and gives special attention to the *trajectories* and *transitions* that pull people into and away from criminal behavior. While this dissertation does not lend itself to a true longitudinal analysis of the survey respondents over many years of their life, it can provide the early foundation of what “pulls” one towards crime and can help theoretically explain the probable factors that contribute to one remaining on the crime trajectory even when one ages. Later, when the juvenile sample in this study is older, an important follow-up study could be conducted to determine who remained involved in crime in the adult years. It is expected that those with low literacy skills and low capital are likely candidates for long careers in crime, if not in prison.

An important theoretical integration Sampson and Laub make to the developmental school is to the process of labeling. They suggest it is one of the few theories that is truly developmental in nature because of its specific focus on processes over time. Although labeling is not measured here in the current study, the interactions with the reading deficient child and the school/teacher/peer processes could result in a self-identity that results in disadvantage, which contributes to the mechanisms for delinquent behavior to be “kicked” into motion. Or better said in a cumulative disadvantage model, the stigmatization and exclusion can be a *turning point* to crime and a transition that keeps one there. In the words of Sampson and Laub (1997), labeling may lead to an alteration of one’s identity, exclusion from “normal routines” or “conventional opportunities” and increased contact and support from delinquent groups. This can be applied to being labeled as a delinquent person, but also as a “dumb” person. The work by Link and colleagues (1982, 1987; Link et al. 1987, 1989) on mental health patients serves as a guide for understanding the developmental nature of the labeling process, according to Sampson and Laub (1997). Link moves beyond direct effects of labeling and draws attention to the *intervening* mechanisms and
developmental nature of the “processes” associated with labeling. In Link and colleagues work (1989), the stigmatization of labeling promotes negative consequences regarding social networks, employment and self-esteem in the lives of mental patients. This is due in part to the person’s own reaction to the label as well as societal reaction to the label. The authors stress that negative effects of the labeling are produced “incrementally” and should be thought of as a series of reinforcing conditions. A formal label of “illiterate” is not really what is being referred to here, but it is the response of the child that is important. For example, for the struggling reader the school experience can cause one to view oneself in low regard. For school age children, their success at school is a primary way in which they are evaluated. A consequence of illiteracy could be labeling, which can produce adverse effects that lead to delinquency. The early impression the teacher forms may have lasting results on the overall success of the child.

Another dimension to developmental theory in relation to reading deficiency is the practice of school tracking. Although school tracking is not studied directly in this dissertation, the origins of tracking for a student are, arguably, to be found in the social processes that are studied here. As the child ages, students are channeled into either a college bound track or some type of technical track, or non academic track. Decisions about which “track” are often made based on labeling processes, students’ grades and predetermined teacher expectations regarding the student. Those who are reading deficient and struggle at school, who have exhibited a lack of passion for learning, who have exhibited anti-social or problem behavior are more likely to be encouraged to journey forward on the technical, non-college track. Once the student has been identified or labeled as either college or non-college bound, their life-course trajectory has been reinforced. College bound becomes a reinforced early advantage and technical track can be viewed as yet another cumulative disadvantage. This assumes
that the child stays in school. For many, when the struggling child passes the age for state compulsory laws the child may completely withdraw from school, only compounding the trajectory.

Labeling and Social Bond are complementary theories in a developmental approach to explaining crime and delinquent behavior. In Sampson and Laub's (1993, 1997) work they stress the integrative connections to Social Control theory. They agree that crime and deviance are more likely when individuals’ bonds to society are weak or broken. However, they view the process as naturally varying across the life span. For traditional control theorist such as Hirschi (1969), the bond is “static” (Sampson and Laub, 1997). Sampson and Laub argue that social bonds are mediated in developmental process in the life course. Specifically tied to the theoretical position of this dissertation is the assumption that, if a child fails at reading, the bond to teachers and school are likely to be weakened. If parents are frustrated with the “inability” of their child to do well, the parent-child bond may be weakened. Peer relations are likely to be affected in that attachment to the more “academic” children may be reduced and bonds may develop to similar struggling children, which can be self-defeating in the academic process. The “acting up” of deficient readers has been substantiated as a defense mechanism in the reading literature. Reading deficiency and academic struggles are likely to be early causes of weak social bonds to the “binding institutions”. Clearly some of the more cited theories of criminology such as social bond can be better clarified when mechanisms are in place that explains why the bonds become weak or broken.

The struggles of the deficient reader combined with labeling processes are likely to contribute to reinforce weakened social bonds. Early school process can be difficult, but also the bond to the “institution” of employment can be weakened when the individual is rejected for desired jobs. There is evidence that some, if not most, corporations and businesses have some level of basic assessment where reading is
measured. Individuals who fail to pass basic admittance criteria are blocked from opportunity. When the individual realizes that jobs are often “knifed off” a term used by Moffitt (1993), the connection to this binding institution might weaken. Evidence will be presented in this dissertation that a “key” to opening doors of opportunity is remediating inefficient reading. Because many jobs actually have entrance criteria and basic examinations to eliminate the “unqualified”, labeling outcomes and processes of stratification can help explain involvement in illegal behavior (although landing jobs is not studied explicitly here, rather it is assumed that those with poor reading skills will have trouble getting jobs). It is likely that reading deficiency is a key to understanding a system of stratification by which people are sorted into and away from certain kinds of jobs and opportunities. When bonds to these conventional institutions are weak or broken, illegal behavior is more likely.

According to Sampson and Laub (1993, 1997) “turning points” can modify life trajectories. They can “redirect paths”. For some the turning points are abrupt and dramatic enough that they cause immediate change. For others, they are part of developmental processes overtime and not a dramatic change that takes place as a single event (Pickles and Rutter, 1991; Rutter, 1989; Clausen, 1993). It is the latter that exemplifies how reading deficiency may explain some of the variance in delinquency. It is a process of “interaction” that is important to reveal.

Rutter and Rutter (1993) indicate that the process-oriented nature of turning points lead to a focus on incremental change and age-related progressions and events, which carry forward or set in motion dynamic processes that shape future outcomes. The supporters of such an approach acknowledge that turning points can be positive or negative; they can lead to more adaptive or maladaptive paths. Reading failure is a turning point that starts a series of events that shape future outcomes in a negative fashion.
In Chapter four of *Developmental Theories of Crime and Delinquency* some attention is given to the fact that the effects of cumulative disadvantages may vary depending on ones’ “place” in the social structure. For example, Sampson and Laub cite Hagan’s (1991) research that the “deleterious” effect of adolescent deviance on adult stratification outcomes is greatest among lower class boys. Middle class boys who escaped the negative consequences of official labeling did not suffer disadvantage in adult occupational outcomes. In brief, there was an interaction effect between social class and labeling. Similar studies include those of Sherman (1992, 1993), who suggests that structural location and sanctions interact. In all cities studied, a randomized experimental design revealed that arrest reduced repeat violence for domestic assault offenders for the employed, but increased it among the unemployed. Sherman concludes that sanctions provoke future criminal behavior when offenders have weak bonds to larger society. Again, an interaction effect was found involving social bonds. Sampson and Laub (1997:153) conclude from review of the related studies that concepts of “knifing off” (Moffitt, 1993) and cumulative continuity are most salient in explaining the structurally constrained life chances of the disadvantaged urban poor. Cumulative continuity basically means a series of reinforcing conditions. For example, those in more advantaged positions provide continuity in social resources over time and are better able to connect to the binding ties of the more conventional lines of adult activity. Early advantage breeds later advantages, early disadvantages breeds later disadvantages. Further Sampson and Laub (1997) cite Maughan and Champion (1999) indicating that among the disadvantaged, the deficits and disadvantage pile up faster, and this has accumulating negative consequences for later development in the form of “environmental traps”. Future options are often more restricted. In this dissertation the environmental traps are interrelated. Some of them include reading comprehension variation, poverty, disadvantaged employment, income variation,
marriage patterns, voting behavior, self-esteem, frustration, delinquency, crime and incarceration and so forth. Overall in this dissertation, the argument is that there is a reciprocal process: early disadvantage is associated with reading deficiency and reading deficiency is associated with delinquency and criminal behavior which further compounds disadvantage. “Early advantages become cumulative advantages; early behaviors that are self-defeating lead to cumulative disadvantage” (Clausen, 1993 p. 521). We can look at the relationship between the various forms of social, human, cultural and physical capital in this regard. This “cycle” of the tendency toward the cumulation of advantage leading to further advantage and disadvantage leading to further disadvantage has been referred to as the “Matthew effect”. This term, now used in the social sciences, is taken from a biblical passage: “to him who hath shall be given; from him who hath not shall be taken away that which he hath” (see Dannefer, 1984: 216). This “Matthew effect” underlines Smith’s (1968) work which alludes to “vicious and benign circles” of development. This basic concept of the Matthew effect is the central theme of this dissertation hypothesizing that capital will interact accordingly. This dissertation will explore some of the likely interaction effects that could be affecting the development of reading inefficiency and its impact on delinquency.

As mentioned earlier the concept of reciprocal effects is an important consideration of a life-course/cumulative effects model (although reciprocal effects will not be tested for in the subsequent modeling here). The “action-reaction” processes are multifaceted. Paterson (1993) for example suggests that antisocial behavior leads to a “cascade” of secondary problems. Reading frustration at school could be a precipitous cause to antisocial behavior. This will be developed more fully in this dissertation. A related example is offered by Tittle (1988), who suggests that delinquency may spark failure in school, incarceration and weak bonds to the labor market which in turn increases later adult crime. In similar logic for the purpose of this study, reading failure
may spark frustration and school failure, which can contribute to delinquency which
could in turn increase later adult crime. Logically, such deficiencies can be connected to
the lack of capital, which may be influencing both reading and problem behavior.
Problems are further compounded when weak bonds and negative labels are
exacerbated by the fact that opportunities are “knifed off”. As mentioned earlier, Moffitt
(1993) uses the term to refer to the “knifing off” of future opportunities and a reduction of
options for a conventional life. While Moffitt is referring to past delinquency and criminal
behavior, illiteracy works in a similar fashion and compounds the problem when an
individual has both a past criminal record and reading deficiency. It makes sense that
these are the very ones likely to commit more aggressive offenses and are the ones
more likely to be incarcerated: only serving to further compound the disadvantaged
position.

While issues of inequality have been addressed in the standard developmental
approaches, the specific mechanisms have not been fully developed. As mentioned
earlier a goal of this dissertation is to contribute to the field by identifying an important
early trajectory and demonstrating the importance of considering processes of inequality
into the models of cumulative disadvantage. Some of the negative social
consequences of illiteracy are easily identifiable and should be given attention in this
dissertation for clarification purposes.

**Stratification Consequences of Reading Failure**

**Review of Related Literature:**

Although the focus of the analysis in this dissertation will be on delinquency as
an outcome of reading inefficiency, the importance of reading inefficiency will be
described here in some detail. The known consequences of failing to read are costly in
American society. “The State of Literacy in America” released by the National Institute
for Literacy (NIL) gives total figures for the entire country, and it classifies literacy figures
by state, county, city and congressional districts (Reder, 1992). According to the report, of those who are “functionally illiterate”, meaning they lack the ability to comprehend print, 43% are living below the government’s official poverty line; seventy percent of those in the lowest reading group reported having no job or working only part-time (NLES, 2002). Related research no longer implies the complete absence of the ability to read. Complete individual illiteracy is rare and classification schemes are now grouped according to levels or continuous measures, with those at the bottom lacking the ability to comprehend directions and news information.

**Racial Variation:**

As in most areas of inequality racial variation is noted. On average, Blacks score 20% behind Whites in reading acquisition; while Jencks and Phillips (1998) report that while the gap has narrowed since 1970, the average American Black students still score below 75 percent of American White students on most standardized tests.

Certainly there are issues with standardized testing, however the racial discrepancy demonstrates that variation in forms of capital may influence reading success, such as physical, human, cultural and social capital. As in the field of Inequality, racial variation is also noted in the field of criminology. The over-representation of Black males in U.S. prisons is well established. While there are many reasons for this over-representation, it is argued that reading deficiency is mediating, or accounting for, in part, the relationship between race and crime. As research shows most inmates in prison cannot read to their age or grade level (Brunner, 1993). Black males are over-represented in reading deficiency and academic failure and in incarceration rates; therefore, attention to this tangled web is warranted. If social background characteristics are influential in this early “turning point” of reading acquisition -- and not all are “playing” on the same “level fields” – then such trajectories are important considerations in explaining racial variations in crime.
The U.S. Department of Justice: Bureau of Justice Statistics, in a report, “Lifetime Likelihood of Going to State or Federal Prison,” uses standard demographic techniques and provides estimates of incarceration rates for the American public. Assuming recent incarceration rates remain unchanged an estimated 1 out of every 20 persons (5%) can be expected to serve time in prison during their lifetime. The chance is higher for men (9%) than women (1%) and higher for blacks (16%) and Hispanics (9%). Shockingly, at current levels of incarceration, newborn Black males in the U.S. have a greater than a 1 in 4 chance of going to prison in their lifetime (p. 1-2).

Unemployment rates for Blacks have traditionally held at about twice that of whites and 20 percent of young black men are neither in school nor working compared with 9% of young white males (see Presidents Initiative on Race, Labor Market #3, 1998 http://www.irpumn.org/website). When labor participation rates fall, it does so more rapidly among Black men than among Whites and Hispanics males. The decline in male labor force participation is concentrated among those with lower levels of educational attainment (see The President’s Initiative on Race, 1998). For example, male and female African-Americans over the age of 18 with less than a ninth grade education that are employed have a yearly average income of $15,855. For those over 18 who have up to twelve years of high school education, but do not earn their degree the average income for those over 18 is $17,564 (Current Population Survey, 2002). Clearly those without a high school education could be classified as living below the poverty line.

The implication to be made here related to the research topic is that those without education make less money, those who are unable to read effectively will be less likely to graduate from high school and obtain degrees -- and that these factors are related to the types and quality of jobs that are available. While racism, classism, and discrimination should not be overlooked, the goal of this work is to focus on the influence of reading deficiency and how it is used as a sorting mechanism in a stratified society.
Ultimately reading deficiency helps start a trajectory with developmental/ cumulative effects, and which explains some of the variance in criminal behavior.

**Reading Skills and Monetary Benefits:**

One study by The National Center for Education Statistics breaks literacy into levels and compares income levels (NCES, 2000). Individuals demonstrating higher levels of literacy are more likely to be employed, work more weeks in a year and earn higher wages than individuals demonstrating lower reading abilities. Individuals in the lowest reading level report median weekly earnings of $230 - $245 dollars as compared to about $350 dollars a week for individuals performing in level three and $680 dollars for those in level five. Nearly half of all the adults in the lowest level on each literacy scale were living in poverty at the time of the study, compared with only 4 to 8 percent in the two highest proficiency levels (NCES, 2002).

The association between skills and opportunity continues to grow. Those with more skill are likely to get more opportunity. The gap in earnings between professionals and clerical workers continues to be documented. For example, the National Center on Education and the Economy (1990) reports the gap in income between professionals and clerical workers has grown from 47 to 86 percent while the gap between white-collar workers and skilled trades people has risen from 2 to 37 percent. College educated males 24-34 years of age have increased earnings by 10 percent while those of the same age without a high school degree have experienced a 9 percent decline in earnings (see the National Center on Education and the Economy, 1990 for more details).

The consequences of not finishing school can be severe. The trend is that individuals with less than a high school degree have suffered an absolute decline in real income and continue to drop further behind individuals with more education (Murnane, 1994). There is support for the proposition that schooling is a fundamental basis for
success in American society. Research has shown that individuals who succeed in school have stronger advantages in occupational placement and earnings attainment (see Ganzeboom, et. al.; 1991 and Kerckhoff, 1995 for review). Reading deficiency is a precursor to academic failure.

Individuals with poor skills do not have as much to bargain with and may be condemned to lower earnings and limited choices. Having literacy skills does not guarantee more opportunity, but it should be understood as an important contributing variable in a stratified society with “sorting” mechanisms in place. Hiring mechanisms often assess reading ability and even for some who have finished basic educational hurdles these assessment processes of hiring agencies can have consequential effects on opportunities for those who have deficient reading abilities.

The previous paragraphs have identified some of the consequences of reading deficiency as it relates to adult opportunities; namely employment and income. What has eluded researchers is that when opportunities are limited, criminal behavior is more likely and illiteracy may account for some of the variation in opportunity. We know that most individuals age out of crime, but there is a substantial portion of “chronic offenders” that remain. The trajectory of reading deficiency -- pulling one to crime and pushing one away from conventional opportunity -- is a worthy consideration in understanding continued criminal involvement (testing this directly, however, will be for later research). Another consideration that is more directly tied to the focus of the current study is how the deficiency affects the younger child. It is suspected that social psychological processes unfold for the deficient reader. The labeling process and self-identity that are likely to occur are damaging to the young struggling reader and may contribute to the early onset of delinquency. Frustration and low self-esteem are likely. Therefore, reading deficiency can be considered as an early trajectory to explaining delinquency.
For the school age years, children are judged primarily upon their academic performance. One logical avenue to determining “self” is mediated through the school experience and more specifically it could be that reading ability, not IQ, is an important determinant of how that experience unfolds. The structure of the American school system is designed in such a manner that students are expected to have accomplished reading skills by third grade. After that time it is necessary for academic success that the students apply their reading skills to the application of learning all other subject matter. For students who are deficient in reading, their experience at school will most likely be negative. The failure to learn to read will likely result in failure to comprehend course subject matter, and the chances for academic failure are enhanced. These observations relate to the vast amount of work in the field that suggests school failure is an important consideration in explaining delinquency. Most of this work however, has not considered the processes that actually explain the school failure, such as reading deficiency, although the considerable research on IQ is an exception.

Most people believe that IQ determines reading and academic ability. However, there is a body of research suggesting that reading ability might actually determine I.Q. Why this logic has not been more promoted in the literature is unclear. This is a very interesting approach that would also help explain racial variation in I.Q, especially given that reading acquisition is related to issues of inequality.

In a society whereby reliance on printed material is the cultural norm, those without the skill are disadvantaged both in opportunity and how they view themselves. Certainly, in an industrialized, capitalistic society, it can affect opportunity. Self-worth can also influence how successful one is in the academic process. The negative outcomes of reading failure can be understood as influencing self-esteem and frustration levels that indirectly influence academic achievement and life’s overall outcomes. Each effect may reveal itself in criminal behavior. In America, school is the only major
legitimate activity for children between the ages of 6 and 18. If a child fails in school, generally the chances are limited as to being legitimately successful (Brunner, 1993). The consequences associated with reading deficiency then seem to be logically connected to cumulative disadvantage in a developmental model of crime.

Reading Failure, Self Esteem and Frustration:

During the 1970’s and 1980’s, research established that reading failure is a cause of sustained frustration. As stated by Brunner (1993) sufficient evidence supports that sustained frustration not only can cause aggressive anti-social behavior, but that in a school setting, reading failure meets all the requirements for bringing about and maintaining the frustration level that frequently leads to problem behavior.

According to Brunner, the student who cannot read has no alternative for achieving the goals established in the academic experience, but forced school attendance laws prevent the student from leaving the frustration-producing environment until they are 16. Not only could general problem behavior be more likely among these individuals, but also anti-social aggressive and self-destructive behavior is probable. Not only does this combination set the stage for students to want to drop out of school but also once such behaviors begin, the chance of forced expulsion or arrest also increases. Schools may even be eager to no longer have to deal with these students. While studies have been limited in directly linking reading failure to school failure, an indirect method more common in the literature is to establish an intervening link of problem behavior. Research attention has been given to the fact that the “problem” student is more likely to be unsuccessful in the school experience. A precursor to problem behavior can be the sustained frustration of reading failure. Evidence has been established that aggressive behavior is highly correlated and predictive of later criminal involvement. Sampson and Laub for example refer to Olweu’s (1979) review of sixteen-studies whereby the average correlation between aggressive behavior and later
criminality averaged .68. Loeber’s (1982) review concludes that a consensus has been reached that children who initially display high rates of antisocial behavior are more likely to persist in this behavior than children who show lower rates of antisocial behavior. Because reading deficiency may spark aggression which can lead to delinquent and criminal behavior, this dissertation will make the hypothesis that reading deficiency will be more correlated with more serious, more aggressive delinquency. An entire paper could be written on this topic alone, but is outside the scope of this current project. However, some attention is necessary here. For a more detailed discussion and review of the literature see Appendix B.

**Reading Failure and “Problem Behavior”:**

A considerable amount of both qualitative and quantitative attention has been given to the relationship between reading deficiency and problem behavior. Problem behavior is then translated into school failure. Three associations are apparent. First, reading disabilities may lead to behavior problems. School failure can create frustration and low self-esteem and the child may respond with antisocial behavior and aggression. The ultimate cause to be considered in this relationship is early reading deficiency. Second, behavior problems may lead to reading disability. Thus behavior problems can affect the child’s motivation and ability to benefit from teaching and impede academic development, specifically reading acquisition. Third, both reading disabilities and behavior problems can be the result of underlying factors such as social conditions including a harmful home-life or language deficiencies, as well as physical or mental impairments.

Rutter and Yule (1970) present a good overview of these associations. It is quite logical to assume that each of the above hypotheses could be true and intervention should be based accordingly. However, from a review of more recent literature and in connection with the direction of this paper, it can be concluded that reading disability
translates into problem behavior (see Gellert and Elbro, 1999). It is acceptable to infer that reading failure fuels frustration and aggression. A few researchers have even linked reading problems directly to delinquency (see Hogenson, 1968). This form of behavior may be more costly than general “problem behavior” because the consequences for the student could likely result in school expulsion and even incarceration, which can ultimately lead to further reduced opportunities in the life course of the individual.

It should also be mentioned that in most of the studies regarding behavior problems, boys are more likely than girls to be identified. Gender differences are also found in regards to literacy. This association warrants further attention.

**Reading Deficiency and Gender:**

The findings from the Progress in International Reading Literacy Study (PIRLS) of 2001, an “International Comparison in Fourth-Grade Reading Literacy”, suggest that gender differences in literacy exist. Fourth grade boys score lower than their female counterparts. On the average, boys score at least 18 points behind girls on the combined reading literacy scale. In correspondence with the direction of this paper, what makes gender differences especially important is that boys are likely to fair less well in regards to literacy, are more likely to be identified with behavior problems, and are more likely to become officially involved with the criminal justice system. While males constitute 48 percent of the total population they make up 94 percent of those in prison (Adult Literacy Survey, 1997). On the other hand, females overall have less difficulty with reading, are less likely to be involved with aggressive behavior, and are less likely to be incarcerated.

In American society cultural norms suggest females are more likely to be engaged in social processes such as being read to and encouraged to sit and read. The expectation of society is still such that boys are expected to be more interested in physical activity and it is more socially acceptable for boys to be less interested in
reading. Society could be fostering some of the gender difference. And some of the variation in gender and crime rates could be explained by the relationship with reading deficiency and problem, aggressive behavior.

**Reading Deficiency and Delinquency:**

For a more complete literature review related to reading deficiency and problem behavior see Appendix B. While academic attention has been somewhat limited, there are some studies. For example, an early study by Hogenson (1968), regarding reading failure and juvenile delinquency, finds that of all the variables analyzed only reading failure is correlated with aggression among a sample of delinquent boys. The study was unsuccessful in attempting to correlate aggression with age, family size, number of parents in the home, rural versus urban environment, socio-economic status, minority group membership, or religious preferences. Hogenson concludes that reading failure may be the single most important factor in the forms of delinquency associated with anti-socially aggressive behavior, such as assault, arson, serious vandalism and sadistic as well as violent acts directed against others. Currently, violent crime and drug related offenses are the crimes most likely to result in prison terms, explaining some of the variation in prison. It is predicted in this dissertation that reading deficiency will be more correlated with violent crime than property crime, or minor delinquency. It is likely that violent crimes are more likely to result in jail and prison time. This can possibly explain high concentrations of reading deficient males in prison.

**Education and Correctional Facility Populations:**

Both studies in the U.S. and abroad confirm that those persons confined to prison are poor readers. Most U.S. studies find that over 60% of inmates are functionally illiterate (see Wood, 1997) and studies outside the United States have found similar results. For example, in Sweden, 64% of prison inmates had reading skills below the 6th grade reading level (Alm and Anderson, 1995). One specific study by the National
Institute for Literacy (1998) finds that seven in ten prisoners perform in the lowest two literacy levels. Once an individual has been incarcerated, conventional opportunities are further limited and the negative processes of labeling are further reinforced. Cumulative disadvantage continues.

**Marriage Patterns:**

In a Life Course Model, marriage is considered as an important turning point. This has been substantiated in the literature. Marriage tends to pull individuals back into conventional behavior. Surprisingly, a connection can be made linking this *trajectory* to the theory presented in this dissertation. Reading deficient persons may be less likely to attract marriage partners. When they do, the partner is likely to be from a similar background, likely from a disadvantaged position in the strata. If the partner is disadvantaged in educational attainment, job opportunity and income level, the positive trajectory of marriage is likely to be minimized. For example, the higher educated tend to marry within their “own group”. Research (see for example, Social Closure Thesis, Parkin, 1974, Goldthorpe, 1980; Weber, 1920, 1921) suggests that more privileged groups in society will use their resources to protect their own position and the position of their class. Marrying within their own group is one way to guard against class intrusion. One can argue whether or not this is the result of a conscious decision on the part of the “actors” or an unintended privilege. The outcome, nevertheless, is the same.

Married partners tend to resemble each other with regard to social status and background characteristics such as educational attainment, which basically reflects the social class of their parents (see Blau and Duncan, 1967). Thus the strength of capital, in all forms, is reinforced through generations. If it is true that persons with more advanced degrees or intellectual abilities marry one another, then the reverse may also be true. Those without education tend to marry each other as well. The outcome contributes to stratification with those with higher educational levels at the upper strata.
and those couples without at the bottom. Therefore “an unequal distribution of education across individuals may be transposed via their marriage behavior into a larger inequality in the distribution of education across couples” (see Smits and Bernasco, 1994). It is unlikely that someone who is educated and values the ability to read would choose someone who is illiterate as a marriage partner. Therefore, the strength of the trajectory of marriage pulling one away from criminal behavior is minimized. Either the deficient reader has difficulty in finding a marriage partner or when they do the partner is likely to have characteristics that keep one on a disadvantaged pathway. The social consequences of illiteracy are vast. It can be hypothesized that illiteracy is intergenerational. The offspring of folks who are disadvantaged in reading ability may have children will similar deficiency. This can be due to sociological influences as well as genetics.

**Biologically Determined Reading Disability:**

Certainly, biological differences influence one’s ability to learn, and this could be related to reading deficiency. For example, we know that dyslexia is biologically based (Brunner, 1993). While reading deficiency can in part be biological, that does not rule out the possible effects of social characteristics on reading ability. The focus of the model in this dissertation will draw attention to the social factors in inequality that can contribute to reading deficiency. However, even for those who have biological causes of their reading deficiency, variation in “capital” may be important as well because the various forms of capital could be serving as moderators in the process by which reading ability improves or develops over time.

If “reading” is inversely associated with criminal behavior, the next step in a cumulative effect model is to determine if disadvantaged “capital” interacts with reading scores to better explain the variation in delinquency. This is an important piece of the puzzle because it could be that for those with biological factors causing their reading
deficiency, those with advantaged capital are more readily able to avoid the life course path of delinquency and criminal involvement - that is advantaged “capital” may serve as a “protective factor”. However, for those who do not possess advantaged capital, regardless of the reason for the reading difficulty, the trajectory of illiteracy is likely to impel one to a pathway of criminal behavior. The relationships between forms of capital and reading acquisition are important to consider. The interactions among them could be an important part of the explanation. For example, for a dyslexic who has strong family support the trajectory of reading difficulty toward problem behavior may be overcome. For those dyslexics without support and who do not receive effective assistance to overcome their adversity, their trajectory may result in a cumulative disadvantage, which can lead to delinquent behavior.

This dissertation acknowledges that some reading deficiency is due to biological determinants. However the measures of reading ability do not assess the specific cause of the deficiency. It simply reports a score. However, the “interaction” with forms of capital can be important in explaining the relationship of reading deficiency on delinquency, regardless of the root cause. “Capital” may serve as a “protective factor” or a “cumulative disadvantage”, more details regarding causal mechanisms will be provided later; for now, attention is given to what is meant by “forms of capital”.

**What is Meant By Forms of Capital?**

Portes (1998) poetically differentiates between the varying forms of capital. He states that whereas economic capital is in people’s bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships. To possess social capital, a person must be related to others, and it is those others, not himself, who are the actual source of his or her advantage. For now each of these forms will be discussed as they relate to reading acquisition, later a connection will be made between forms of capital and crime.
Human Capital:

No doubt cognitive ability, IQ and disability play a part in overall reading success. It is interesting to note that in earlier reading research these factors were the only variables considered. Genetic influences play a role in literacy and academic attainment; however we cannot under-estimate the interaction with the social environment. A pure genetic model or a pure sociological model is limiting. Sociologists, for example, have been reluctant to demonstrate the role of genetics in the academic process. Hallinan (2001) sites an important argument made by Massey (1995) when clarifying the importance of social scientists addressing genetics. Massey argues that sociologists have acted cowardly by failing to bring the power of their theories and data to provide understanding to political and sensitive issues. The reluctance of sociologists to study the influences of mental ability as a factor in individual outcomes, and specifically racial disparities created an intellectual vacuum that made the Bell Curve argument by Herrnstein and Murray (1994) possible. According to Massey if sociologists during the 1970’s and 1980’s had addressed the issue of IQ testing to measure racial differences, a body of research would have been available to counter the arguments advanced by the Bell Shape Curve argument.

Cognitive ability, genetics and learning disabilities will be discussed and then tied back into inequality in two ways. First, as mentioned earlier 'capital' may serve as a protective factor or as part of a cumulative disadvantage that can account for some of the behavior outcome of delinquency, even when the reason for the illiteracy is biologically based.

Secondly, it is important to demonstrate that even biologically based reading deficiency can be related to issues in inequality. For example, poverty can relate to physical well-being and brain development. More clearly poverty is related to nutrition, which in turn can affect cognitive skill development. Some studies find relationships
with low birth weight and cognitive development. As Corcoran reviews, Brooks-Gunn et al. (1994) find that for low birth weight children parental income, as measured in the child’s first three years, strongly predicts children’s cognitive test scores at age five. Developmental deficiencies can be due in part to deprivation of physical needs (see Miller and Korenman, 1993), social conditions and personal disabilities.

**Physical Capital:**

The effects of physical capital includes the influence of social economic standing. As Parcel (2001) contends “studies regarding the effects of poverty on child outcomes establish that material deprivation is inimical to favorable child development” (supporting studies include Huston, 1991; Duncan et al., 1994; Garrett et al., 1994; Duncan and Brooks-Gunn, 1997 to list a few).

Research has demonstrated that children from lower income families are at a disadvantage when they start school and fail to recover for the duration of their academic experience (Entwisle and Alexander, 1992). Children raised in poverty acquire less schooling, achieve much lower incomes and are much more likely to be poor in early adulthood than children raised in non-poor families (Corcoran, 1995). Low parental income is associated with fewer years of schooling, lower chances of being a high school graduate, and lower college attendance even when family structure, parents’ years of schooling, parents’ work hours, parent welfare use and neighborhood characteristics are controlled (see Corcoran, 1995 who sites Hill and Duncan, 1987; Haveman et al., 1991; Brooks-Gunn et al., 1993; Corcoran et al., 1987; Haveman and Wolfe, 1994 and Duncan, 1994). The effects of physical capital can be understood at the level of the family, the school and even the community. There are many related issues but overall two things need to be acknowledged here in regards to physical capital. First it is important to acknowledge the direct influence of SES on reading development but also to demonstrate the mediating relationships of physical capital to
other important variables in the learning process and specifically to tie this to the development of reading skills. For example, studies have correlated reading success to the presence and number of books and learning resources in the home, not only because of the resources available but because the influence could be mediated through the fact that parents may be sending a signal that education and learning is important when books are readily available.

Social and physical backgrounds promoting literacy can have an influence on children’s progress. Physical resources (capital) have a higher probability of allowing children exposure to interesting books and events such as art and theater can foster the desire to become an effective reader. Such resources may help children be more successful at navigating the literacy and the school experience. This brings us to the notion of cultural capital.

**Cultural Capital:**

Culture can be understood as a resource that plays a role in educational and occupational outcomes (DiMaggio, 1982, DiMaggio and Mohr, 1985). The notion of culture as a resource that helps provide skills for a greater chance of success and production are differently available to members of societal groups via parents’ skills and socialization of their children, peer group pressures (Farkas, 1996) and background exposure. Basically, having cultural capital bridges the gap to the other forms of capital (Farkas, 1996) yet can be understood as exhibiting its own level of influence. We must, however, be careful to avoid viewing culture as influencing action simply through its effects of “values”; the influence of culture on action should be viewed as a “toolkit of skills” from which people have to draw upon to determine a course of action (Swidler, 1986). The focus in this analysis aligns with Swidler’s conceptualization of cultural capital rather than culture being reflected in attitudinal differences or notions of a culture of poverty. As Bourdieu suggests, it is not that cultural practices of the more “elite”
groups are better than others, because cultural capital is arbitrary, but behaviors and symbols associated with higher culture are more likely to be rewarded and recognized by the teachers. Specifically, Bourdieu suggests that students receive benefits from their speech, dress and overall demeanor when it is affiliated with cultural practices of the elite or at least in comparison to that of the teachers. It was Bourdieu many years ago who developed this notion of socioeconomic advantages mediated or transmitted via cultural capital. Modern day teachers expect children to start the school process “reading ready”. Should children fail to meet teachers’ cultural expectations, the beginning learner could experience negative consequences. This could greatly affect the teacher’s willingness the teacher has to work with the child as well as harm the child’s self-esteem at an early age.

Farkas et al. (1990) have applied the notion of cultural capital to ethnic or racial differences in schooling. Related studies examine the interaction between teachers and students of different ethnic groups from a cultural perspective. (Others have done similar work and will be discussed later). Overall, past experiences and cultural “exposures” can determine the resources from which children have to draw when negotiating an effective response at school. This is especially important when teachers have pre-existing expectations about how students should respond. Swindler contends that students that demonstrate organizational skills, eagerness to learn or please the teacher are more likely to earn good grades. In Swindler’s research mention is made to individuals having a “cultural tool kit” by which they utilize to navigate effective responses, this notion can be appropriately applied to reading acquisition. If there are many “tools” in the “tool box” such as cultural styles, skills, behaviors and habits that teachers find appropriate, individuals are at an advantage in the academic experience. It has been found that one in five children entering kindergarten in America do not know that print reads from left to right, where to go when a line of print ends, or where or when
a story ends (see West et al., 2000). Logically, these children are at a disadvantage when compared to those well equipped to know how to navigate desired responses at school when it comes to reading. When teachers have the ideology that children should come to school exhibiting some readiness to read and the children do not know which way print reads, some teachers might interpret this as disinterest on the part of the student and the student’s parents. The teachers might themselves lose interest, which could compound the problem; variation can exist in reading success not because of level of ability but because of the fact that some children have more “tools” to utilize in navigating the process of reading acquisition. It could, however, be interpreted as a lack of capability, which can have detrimental consequences, specifically in the form of labeling process, reduced bonds and cumulative disadvantage.

Another way to conceptualize cultural capital is by understanding cultural linguistic differences. Parents’ linguistic styles are related to their children’s school success in many ways. It could be closely tied to reading acquisition. Farkas has given attention to this area also. Chapter three in his related book demonstrates the important role played by family linguistic culture in determining the child’s cognitive-skill development. Cultural linguistic or dialectic difference can have a direct influence on reading development. When the English language is spoken differently than it is written this could hamper reading acquisition. Farkas (1990) has connected this to racial variation in reading ability.

The verbal “tone” that parents’ utilize when dealing with their children has been shown to influence child development. Not only does variation in the way we speak affect early reading ability for children; but also how things are said or the overall tone in the way parents interact with their children is important in their development. The concept of parenting or discipline style can be understood as a form of cultural linguistic of the family; but it more appropriately should be conceptualized as a form of social
capital. Parental involvement, family structure, and network of relationships are all forms of social capital. This section will warrant the most attention for the current research.

Social Capital:

As many in Sociology would indicate the concept of social capital is not new, it's widely used, and its origin can be dated back to the early writings of Emile Durkheim and Karl Marx. From an early Durkheimian perspective the participation of individuals in groups can have beneficial consequences. In particular as he promoted, it can reduce the propensity of self-destruction and anomie, benefiting the individual and society as a whole. Marx’s work relates to social capital by making the distinction between an atomized class-in-itself and a mobilized and effective class-for-itself (see Portes for review, 1998). Clearly the mobilized class, working together, has a higher level of direct benefits. The network and types of relationships are important.

While the basic concept has loomed in sociological writings, it was Pierre Boudieu, during the early 1980s who formally conceptualized the concept of social capital, as we know it today in modern literature. The usage of social capital that connects most clearly to this dissertation is work by Coleman (1982, 1987, 1988), Teachman (1987, 1996,) Teachman and Paasch (1996, 1997), Parcel and Menaghan (1990, 1993, 1994a, 1994b) who tie its influence to academic achievement.

Social capital may occur both within the family and outside of the family. In regards to the family, social capital is reflected by the amount of support and quality interaction from the parent to the child. Outside the family, Coleman and others have supported that the density of social interactions among parents in different families, among parents and institutions in the community such as schools can increase a common goal towards positive educational outcomes.

Coleman wrote that if human capital possessed by parents is not complemented by social capital embodied in family relations, it is irrelevant to the child’s educational
growth. The way social capital effects schooling and learning should be understood as a filtering process. Social capital can be understood as enhancing the likelihood that the other forms of capital will be transferred to children and there are many ways social capital can be conceptualized. Because the forms of social capital are so varied more attention will be given to this discussion.

**Single Parenthood:**

Ample research is available suggesting that students in single parent families are at a greater risk of educational failure than are those in two parent homes (for example, see Entwisle and Alexander, 1995; McLanahan and Sandefur, 1994; Zill, 1996). “Intact” family status has been empirically associated with advantages in educational attainment and social well being (McLanahan and Sandefur, 1994) as well as better occupational placement and earnings attainment (Powell and Parcel, 1997). Reading development on the part of the child may also be influenced by the number of parents in the home and the type of social interaction that is typical in homes where time and resources are more limited. Social capital, as well as all other forms of capital, tends to be lower for children in single parent homes because they lack the additional benefit of a second parent via additional “manpower” and other resources. The mechanisms through which children are thought to be at an academic disadvantage in single parent homes are through the lack of availability of time, money and resources. This could be applied to the reading acquisition process, especially when we accept that the learned trait of reading begins in the home and not the school.

Social networks, monetary and educational benefits and so forth of single parent homes could likely be fewer than two-parent/traditional families. From a review of the literature it appears that the early work in the field measured number of parents in the home and did not account for mediating effects. More recent research considers the dynamics of and consequences of parents in the home rather than just measuring the
number of parents. For example, Pong (1998), and others, hypothesize that the effects of single parenthood on educational outcomes is most important primarily at the aggregate level. Never married mothers are more likely to live in poorer communities and have few social networks. When husbands and wives dissolve a marriage it is more likely that the mother assumes custody of the children and moves from wealthier to poorer living conditions and communities. Moving and changing schools affects children’s learning outcomes by eroding access to community resources and support networks. The transition of the move directly can be used to predict school failure (Teachman, Paasch and Carver, 1996). The processes will be illuminated and a connection will be made to how these processes can specifically effect reading development (specifically see Appendix A).

If the schools are in poorer communities and poorer school district quality of instruction at the school could be significantly less compared with wealthier school districts, which can affect school outcomes as well. Again, the relationship with single parent homes and school failure should not be interpreted as causal but mediated through other sociological variables. Another example would be number of siblings in the home.

**Number of Siblings:**

Coleman has made the argument that the influence of social capital available to children is related to the number of siblings in the family. The logic is that families with greater numbers of children will have less time and energy to devote to a single child in the family; thereby diminishing the positive effects of other forms of capital. Several researchers such as Parcel, Menaghan, and Downey contribute to the literature and make a connection of number of siblings and social capital. Later in this work research will be presented that shows an association with number of children and lower academic achievement and even dropout rates. No existing research was found regarding the
effect of number of children in the home on reading acquisition; but it is anticipated that since reading is a social process and begins very early for the developing learner when social resources are less, reading success may be hampered. If parents’ time to the developing reader has to be spread over a higher number of children then each child receives less one on one attention.

Many variables regarding family dynamics are influential on development and success of the child and can be conceptualized as a form of social capital. Another variable closely related is parents’ education.

**Parents’ Education:**

One way that the effects of parental educational can be understood is as a form of physical capital. More parental education could result in more economic resources; but the influence can also be understood as a form of social capital by the fact that the more education of parents, the more “beneficial” social networks they have. Parents who have received higher educations may be more likely to promote academic success for their children and specifically reading in the home. Parental schooling is positively associated with children’s schooling (Corcoran, 1995). An atmosphere that promotes the importance of reading could be beneficial for the beginning reader. Those parents who have achieved their own education may be more likely to promote the idea that their children do the same. If families associate with other families who value reading achievement then the general message of acquiring the skill for the developing reader is further reinforced.

Some research finds that students whose parents have a college degree benefited more from parental help with homework than did those children whose parents lacked a secondary degree (see Balli et al. 1997). If parents have figured out how to navigate the academic experience they may be more likely to transpose the necessary
skills to their offspring. For example, parents’ relationships with teachers could have an influence on reading and academic success.

**Parent/Teacher Relationship:**

Parent teacher relationships can prove important in the child’s academic success by providing the parent with a clearer understanding of expectations of the child therefore empowering the parent to assist their children in a successful school experience. Some research suggests that when relationships between parents and teachers exist the child is more likely to receive a consistent message reinforcing the importance of academic achievement (Epstein et al. 1996, 1995, 1987). When parents and teachers work together on the same curriculum, reinforcement is more likely at home and at school. Although the terminology is not used in the ‘education literature’ this can be conceptualized as a form of social capital. As alluded to earlier when speaking to the issue of family linguistics and parental tone, how parents interact with their child proves important in their academic success as well. Research will show that when parents read to their children, then children are more likely to acquire the necessary skills themselves (Wells, 1985).

**Parenting Style:**

While parenting style is not directly assessed in this dissertation, it is a form of capital that is often connected to other forms of capital and is worthy of discussion. For example, researchers give attention to how parents interact with teachers, administrators at school, and their children; some suggest that this is related to socio-economic position. Research finds that parents in the lower class are more likely to hold the opinion that it is the schools’ job to educate the children, less likely to attend parent-teacher conferences and have less overall involvement in the school (see Lareau, 1987). Lareau’s research reports that working class parents reported feeling unqualified to discuss academic issues and therefore avoid them. When conversations between
working class parents and teachers occurred they are more likely to be regarding bus schedules and playground activities. The important first steps of reading may be overlooked if parents view the job as the schools’ and not as their own. Also, if parents fail to talk with the teacher about what skills need to be fostered at home when it comes to reading development, success for the child may be more unlikely.

It should not be interpreted that parents in the lower strata care less about their children, but the variation in outcome between the classes could be based in part on whose “job” it is thought to be to teach the child to read. If there is class differential among parents’ attitudes regarding their responsibility in their children’s academic success then the influence of SES makes more sense. Also, the cost of attending school functions could weigh heavier on the lower class in terms of financial means in scheduling time off, arranging and paying for childcare, and in obtaining and paying for transportation. Also jobs of the lower class probably provide less flexibility in ability to leave their job when events at school are held during work hours. While the absence of the parent in the school process could be sending negative messages to the teachers, which could have its own negative influences, the children my receive a subliminal message that the parents do not care about their education which could have detrimental effects for the child’s academic experience.

Research suggests that middle class parents are more likely to view their child’s education as, in part, their responsibility and not just the schools and are more likely to engage in conversations about academic issues with their child’s teacher and a consistent message about academic success is likely to be given at both school and home. Reading at home is also correlated with class position. Kohn, many years ago, argued that parents’ style of interaction with their children (and for that matter style of interaction with school officials) is influenced by the actual occupations of the parents. It is argued that parents of any socioeconomic status can equally desire what is best for
their child and are actually teaching the children the skills they deem necessary for success. However, parents in the working class occupations may be unknowingly increasing the likelihood that the child will remain in the same social class position by what qualities they deem as most important for success. Kohn argues that parents who work in occupations such as data entry or factory work are rewarded for external standards such as punctuality and obedience to authority. Based on the behaviors that are important for success in jobs with lower autonomy, parents tend to prepare their children for success in these same kinds of occupations. On the other hand, parents in careers where independence and more self determined decision-making and activities are desired logic suggest they will be more likely to promote the development of children’s internal controls and prepare them more readily for middle class occupations. Based on this logic it is understandable why Kohn argues that the disciplinary style of the parent can vary depending on class position. Parents in the lower class occupations would be more inclined to exhibit punitive punishment and external controls whereas self discipline would be the goal of middle and upper class occupations. Embedded practices or parenting styles that parents may not even be aware of can have and influence on academic success of the kids. Reading is a disciplined activity and one that has to be fostered in young children. If reading acquisition is revered or highly utilized in certain occupations of the parents, the underlying theme of the importance of the skill might more likely be transferred to the children.

Although the effects are difficult to isolate, some scholars report that the positive effects of socio-economic status on school performance are mediated entirely by parenting practices (see Stevenson and Baker, 1987 for review). One form of parenting practice is reinforcing necessary academic skills by the children. It can be argued that failure to learn to read begins in the home and not at school. The Early Childhood Longitudinal Study Kindergarten Cohort of 1998-99 identifies that there is a lot of
variation in children’s academic ability when entering Kindergarten. Some come to
school already reading and others do not know that print reads left to right, where to go
when a line of print ends or where a story ends in a book (West, et al. 2000). Certainty
intellectual ability is important; but reading success has its foundations in the home by
being exposed to print, being read to and in fostering early developmental skills.
Parental interaction is important and can be conceptualized as a form of social capital.
Research suggests that parents reading to their children, during the preschool years,
have shown positive effects on children’s readiness for school, which contributes to their
overall success. Data from the survey the “Children of the National Longitudinal
Survey of Youth” (CNLSY) show that even when controlling for demographic variables
there is a four-point increase on the vocabulary scores for the five and six year old
participants in the study, when their mothers read to them daily. Also, a well known U.S
Department of Education study entitled “A Nation at Risk” also finds that children whose
parents read to them are much more prepared for school and reading success.

Research suggests that reading to young children helps them learn to speak and
then later to learn to read and write (Wells, 1985). Studies indicate variation exists for
race and class in regards to young children being read to; this could be related to
resources and time availability, educational level of parents, and overall attitudinal
difference on the part of the parent on whose job it is to teach reading. This is another
area deserving of attention. Others find that parenting styles which show success in
youths’ academic performance is related to how much quality time and attention the
parents gave to their child and the manner in which parents talk to their children. The
quality of speech exhibited by the parent is found to be the strongest predictor of later
child IQ in one particular study (Hart and Risely, 1992). For young children reading to
them is the most academic stimulation that could occur. Parenting style and parenting
discipline is also correlated with delinquency and many of the same forms of capital
mentioned above can also be considered as important factors to consider with explaining delinquency. If it is recognized that forms of capital contribute to both delinquency and reading acquisition then a cumulative disadvantage model has been made clearer. The interactions and how parenting style may be connected to other forms of capital such as parents' education, family structure, number of children in the home and so forth are important.

These many forms of capital have been identified and given attention in this dissertation because they importantly contribute to reading success, and for the purpose of this paper, they may importantly “interact” with reading acquisition in a way that better explains some of the variance in delinquent and criminal behavior. For those familiar with criminological literature, some of the same mechanisms of capital that influence reading efficiency have also received attention that they also influence delinquency; briefly some of these include parental style and discipline techniques, parent-child relationships, family dynamics such as number of children in the home and single parenthood, parents education and economic levels, school and community environment etc. Each of the forms of capital, physical, human, cultural and social, can be assessed as influencing delinquency and the literature review on the related work would be vast; however a brief connection will be made to the themes of capital in the traditional theories.

**FORMS OF CAPITAL AND DELINQUENCY**

Now that the forms of capital have been identified as they are most commonly understood in the inequality literature, it is important to mention how these same forms of capital can be understood and how they contribute to our understanding of causes of crime. As mentioned in the early part of this paper, much of theory in criminology incorporates one or more of the various forms of capital. This study will use available
NLSY data to measure physical, cultural, human and social capital. Before the data analysis begins however, how these forms of capital relate specifically to criminology is discussed.

**Physical Capital:**

Most social structural approaches have themes of variation in physical capital present in their theoretical approaches. For example, Strain theory, relative and absolute deprivation have at their core issues of physical capital by suggesting that crime is an outcome of an inability to obtain material wants through conventional means. According to the logic of traditional strain theorists, Robert Merton (1938), social inequality leads to anomie and, in order to deal with the “goals-means” conflict some people resort to criminal behavior. Because the legitimate means of obtaining material wants and needs are unequally distributed in society, variation in physical capital can be considered as a contributory factory to crime and delinquency.

There is discussion in the Inequality literature that a single measure of income at one point in time is an inadequate measure of family well being. The available data for this analysis did not lend itself to a good assessment of physical capital either; therefore the decision was made to tap another measure of family well being/physical capital which is social organization. It is assumed that by assessing the social organization of the community where the individual resides a “look” at one’s level of physical capital can be inferred. Measuring social organization also allows for other forms of capital to be considered in how they related to disorganized communities. For example, in these communities the opportunity for criminal behavior is likely to be higher and forms capital are likely to be scarce, namely social capital and cultural capital. Primarily, social organization of the community will be used as a demographic or control variable in the analysis.
Cultural Capital:

Another branch of social structure theory that has physical capital issues at its base is Cultural Deviance Theory. However, Cultural Deviance Theory more directly correlates to aspects of cultural capital. In this branch of criminological theory it is suggested that because their lifestyle is frustrating and disappointing, members of the lower class create an independent subculture whereby the goals are more attainable. These more easily attainable goals however, are likely to conflict with the standard legal code. Thorsten Sellin (1938) was one of the first to draw attention to issues of cultural adaptation. Walter Miller (1958) and Albert Cohen (1955) long ago demonstrated that the “value” system of the various classes may differ.

Cultural Deviance provides theoretical justification for expecting that variation in cultural capital might influence delinquency outcomes. When making this connection to cultural capital and delinquency, the discussion above regarding cultural capital and reading acquisition should be re-emphasized. The point is made that including issues of cultural capital can best be accepted when it is recognized that such propositions do not have to mandate that it is a set of “values” that exists, but more importantly it is the cultural “exposures” and “tools” that are important. Doing so aligns more clearly to theories such as Differential Opportunity (1960) and even social learning theories such as Sutherland’s (1939) Differential Association. Being well equipped with more cultural capital may help the youths not only navigate the school experience more successfully, but such individuals may navigate the processes with all agents of social control more successfully, including social agents making the decision to arrest or sentence. So for the purpose of this present study, cultural variation is not conceptualized as a “rejected subculture”, but exposure to cultural opportunities that help the child navigate the school experience.
Social Capital:

Control theories, such as social bond, are suggestive of the importance of “relationships” and has been deemed social capital implying that social relationships are something people “draw upon” for social psychological “comfort” as well as for a broad range of more utilitarian “needs”. Much work by Sampson and Laub (1993, 1997) has emphasized social capital in terms of changing familial and other institutional involvements. As is made obvious in the section above regarding the influence of social capital on literacy, forms of social capital can be conceptualized in many ways. Social relationships and family dynamics are the most common way to operationalize social capital. But it should be remembered that social capital best refers to the structure of relationships and bonds to institutions, similar to the traditional works of Travis Hirschi (1969). In this work social capital represents the bonds and communication between the parent and child.

Human Capital:

Human capital can be conceptualized in many ways as well. Traditional theories such as self control and the influence of personality and biological traits have at their core issues of human capital. Some research has given attention to the traits that parents may be “passing” to their children. Certainly, these can be understood as biological traits, but also factors such as the level of education of the parent can be understood as contributing to the personal human capital development of the offspring.

Probably, the most commonly sited form of human capital in regards to the criminological literature has been the work on IQ (see Hindelang and Hirschi, 1977). Differences have been noted in that IQ is inversely related to delinquency. While critics and advocates of an IQ model of delinquency can be found, it is the position in this paper that another, maybe even more important and more appropriate form of human
capital should be considered as well, reading capability. To test the relative effects of IQ and reading efficiency, several forms of cognitive ability will be assessed: reading ability, IQ and sequencing ability (digit span). Digit Span is primarily included in these data because it is one of the common measures used to identify students in need of additional support because they lack short term memory skills (Vargo et al., 1995). This skill is somewhat independent of intelligence and reading ability, but may impact both of these measures (Psychological Corporation, 1974). Some literature suggests it is an indicator of dyslexia (Asbjørnsen, 2004; Ackerman et al., 1990) so it is appropriate to include in related work on the influence of reading ability on delinquency.

The above section identifies how issues of capital are common themes in much of the traditional theories in criminology (whether subliminally or literally). This dissertation provides this discussion simply to demonstrate that including such explanatory variables, such as forms of capital, are justified based on past theoretical positions. The present research does not claim to evaluate completely the legitimacy or worth of each related individual theory, but asks the reader to accept, based on previous work and traditional theory, that in a cumulative disadvantage model each form of capital may be important to include, and by providing measures of each form a more complete model of the processes involved. Certainly, an appropriate research project in criminology could be to use these data to specifically test each theory mentioned. However, the basic theoretical orientation of this dissertation is to test some hypothesis derived from a cumulative disadvantaged approach. Hopefully the previous pages have made clear how the various forms of capital contribute to literacy and delinquency as well as overall inequality.
CHAPTER TWO: HYPOTHESES

While there are many variables of interest incorporated in the model, the main purpose of this research is to determine if reading acquisition is associated with delinquent behavior. This will be accomplished, statistically, in a variety of ways. First, hierarchal models using standard OLS regression will be tested with the final model including all of the variables presented herein. A primary goal of this part of the quantitative analysis is to assess the role of IQ and the role of reading comprehension as predictor variables on delinquency. The second analysis will test for interactions among the variables and determine if the explanatory power of the independent variables are moderated by the presence of another variable in the model. As the literature suggests perhaps father’s presence in the home, number of children, mother’s education and so forth are important moderators in explaining delinquency. The final statistical tests will employ the use of a path analysis to determine the extent to which reading comprehension serves as a mediating (intervening) factor in the relationship to delinquency. Tests will be conducted for how exogenous variables are mediated through cultural, human and social capital to better understand the paths to delinquency. Specifically, it is expected that many of the common predictors of delinquency will be mediated by reading comprehension deficiency.

As mentioned earlier, it is argued here that reading deficiency is a more important predictor of serious or aggressive delinquency rather than “soft” delinquency. We are somewhat restricted in the analysis because our measure of delinquency do not control for this. There are few measures of aggressive behavior in the NLSY child survey. For this analysis a test will be conducted to determine if an argument can be made for overall delinquency. It is speculated however, that if illiteracy spurs frustration
and aggression then the behavior outcomes are more likely to be aggressive and more serious forms of delinquency. Minor offenses are more likely to be committed by a large diversity of the youthful population. Therefore, it is hypothesized that it is important to operationalize the dependent variable accordingly, using a measure of the less common, more serious based delinquent offenses—of course the operationalization of the dependent variable will be restricted by the available questions in the data base used here, the NLSY Child Survey. Since it is the more problematic delinquent behavior that is the most concerning from a criminological/policy standpoint, such studies are warranted. However, if support is found here for a more “generic” measure of delinquency then it is likely that future research which analyzes only aggressive behavior will likely find support.

Overall, the goals of the statistical analysis are as follows: to first measure “direct” effects of the independent variables on delinquency, to then test for “conditional” effects and third to test the extent of the mediating effects.

**Hypothesis I: Reading Deficiency and Delinquent Behavior**

**Hypothesis I:** It is hypothesized that reading inefficiency is positively associated with delinquent behavior, net of other factors. Specifically, it is predicted that there will be an inverse relationship between reading scores and delinquency, as reading ability increases delinquent behavior will decrease. It is predicted that reading will explain some of the variance in delinquency, even when other known correlates of crime are held constant.

It is speculated here also that reading comprehension will be just as-- or even more-- important as IQ, in explaining variation in more delinquency.

**Hypothesis II: Forms of Capital and Delinquent Behavior**

**Hypothesis II:** It is hypothesized that various forms of capital are negatively associated with delinquent behavior, net of the other variables in the model. Specifically, it is
predicted that there will be an inverse relationship between physical capital, human
capital, social capital, cultural capital and delinquency. As capital increases delinquent
behavior will decrease. It is predicted that each form of capital will explain some of the
variance in delinquency, even when other known correlates of crime are held constant.

This section is basically a validation of what is already known in the field that
variation in capital is correlated with crime and delinquency. More attention will be
given here to how human capital variables contribute.

**Hypotheses III: Interaction Effects and Delinquent Behavior:**

**Hypothesis III:** It is hypothesized that some of the known correlates of delinquency are
actually moderated by the presence of other variables in the model. In other words, the
influence of one variable on delinquency is actually moderated by the presence and level
of another variable. For example, it is hypothesized that some of the cognitive
measures, capital measures and the demographic variables will interact with each other
to better demonstrate the relationship with delinquency.

Having a better understanding of what is actually happening with the cognitive
variables and the other measures of capital is worthy of statistical investigation. It is
important to assess the direct effects of IQ or reading ability on delinquency. In addition,
the general theoretical considerations discussed above lead to the consideration of how
the influences of variables on delinquency are actually dependent on levels of other
variables in the model.

**Hypothesis III Rational:**

It is hypothesized that when indicators of social, cultural, physical and human
capital are tested along with the other demographic variables, significant interaction
effects will be revealed. It is also expected that some of the demographic variables, for
example race, ethnicity and gender will interact with the other variables. As it specifically
relates to this study, it is expected that those with more “capital” will be less likely to be
poor readers so the influence of reading deficiency is likely to be minimized when the other forms of capital are higher. That is, poor reading ability will not have such a detrimental effect among those “rich” in other forms of capital – the latter will “buffer” the negative consequences of poor reading. At the same time, it is also expected that stronger capital and stronger reading (together) is likely to be linked to reduced delinquency.

Conversely, and in direct correspondence with the cumulative disadvantage theory discussed earlier, those weak in the various forms of capital will be even more likely to be involved in delinquency as a result of deficiencies in other forms of capital. In essence, the hypothesis is that “the rich get richer” while the “poor get poorer” is the basic premise of the “Matthew effect”. Basically the “Matthew effect,” is a biblical reference to a famous quote in St. Matthew’s gospel: “For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath” (quoted in Merton, 1968: 58). Merton used the term “Matthew effect” to describe how scientists who were somewhat famous were better remembered when their ideas were made known, such that they became even more famous. Others have used the term to describe human capital (Shaywitz et al., 1995). Sampson and Laub for example, use the term in their Life Course theory of cumulative disadvantage. Here, tests will be conducted examining the various forms of social, cultural, human and physical capital, in terms of the cumulative disadvantage general hypothesis (i.e., Matthew effect). It other words, it is expected that advantaged capital leads to more positive effects of other forms of capital on reducing delinquency. For those not rich in capital, cumulative disadvantage is likely to interact in ways that increase the propensity toward delinquency.

It could be that the effects of reading deficiency or low IQ on delinquency are minimized when other forms of capital are high. For example, if a person has a reading
deficiency but strong social capital and support in the home, then the deficiency is less likely to be exhibited as delinquent behavior.

This logic reflects a basic notion that even for individuals with reading deficiency that are biologically determined, when “capital” is high there is a greater probability that delinquency will be less likely. On the other hand reading deficiency such as dyslexia, when matched with deficient social capital (parent bond), is likely to be associated with increased delinquency. As stated earlier, prisons are filled with reading deficient males (Wood, 1997; Alm and Anderson, 1995; National Center for Education Statistics, 1994), so perhaps rather than it just being reading (or IQ) that is the single identifier, it is this deficiency matched with other deficiencies that are problematic. This ties in closely with the theoretical direction of this dissertation regarding the cumulative disadvantage model. Inequality issues can likely contribute to reading deficiency which in turn contributes to delinquency. While a general hypothesis is presented regarding the significance of interactions, detailed predictions are intentionally being avoided.

There are two reasons for this. One, there is little by way of systematic evidence on which to develop a specific theory of interaction effects involving the variables discussed here, other than the general expectations summarized with the concept of a “Matthew effect”. Two, as is often the case with product terms, there are substantial multi-collinearity issues that make true tests of hypotheses involving interaction terms problematic. Specifically, many of the product terms used to test for interaction effects are highly correlated with each other or with the component variables used to calculate the product terms. Because the “Matthew effect” is stated in such general terms, tests for interactions will be done (limited here to bivariate, linear interactions) among all of the independent variables (whether exogenous or endogenous). As such there is a danger of Type I errors (rejecting the null hypothesis of “no effect” when there is no effect) because so many interactions are tested for that some regression coefficients
associated with a product term would be expected to deviate from zero by chance. For example, assuming an alpha level of .05, one in twenty product terms might be expected to be statistically significant by chance.

In part to simplify the analysis, a regression procedure will be used that will only allow product term variables into the equation if they are statistically significant and if they have acceptable independence from the original variables (so called “main effects”) or “first order” effects – Cohen et al., 2003: 285) or other product terms already included in the equation. This form of regression analysis is referred to as “forward entry” will be used in the regression analysis to test for interactions (the “main effects” variables are entered prior to the “forward entry” procedure). Roughly 126 cross product terms will be computed; by using forward entry selection only those that are statistically significant and not collinear will be entered into the equation. This is a more manageable method to test for multiplicative effects than entering all of the variables and then removing the collinear ones and non-significant ones.

**The Importance of Looking at Multiplicative Terms:**

Many statistics books and related courses suggest the importance of testing for interaction effects. However, in reality, considering the plethora of quantitative studies in the fields of Criminology, Psychology and Sociology one finds that there has been minimal attention given to interaction effects. Jaccard et al. (1990) review seven major journals in Psychology and Sociology over a five-year period. They report that of the 116 articles involving the testing of structural equation models, only eight of them include interaction effects between the variables.

It is hard to say why so few studies report or even test for interaction effects. Perhaps multiplicative terms are not as important as theoretical logic suggests. Perhaps theory does not drive the need to include them, or developing related theory is too complicated to “separate out” the justification for interaction effects. Perhaps it is an
oversight on the part of researchers, or perhaps multiplicative terms are just too cumbersome to test and too difficult to interpret. While the reasons for the "neglect" are vast, the theoretical base for including the use of multiplicative terms in the regression equation has been demonstrated.

Smith and colleagues (2000)—as well as others—suggest that interactive terms may have the potential of improving knowledge of how individual predispositions interact with context to explain behavior. As it relates to this current research project, basically it is hypothesized that many of the effects previously thought to be general are in fact moderated or contingent on the values of the other variables. For example, IQ or reading ability may be more detrimental (or beneficial) for one racial, gender or ethnic group as opposed to another. Smith et al. (2000) suggest that empirically it may be more likely to find interaction effects when individual-level characteristics are used to explain the dependent variable then when aggregate level variables are used. However, as they point out, despite the promise of increased explanation built on the foundation of interaction effects, past research has shown only a few instances of them holding statistical significance in the field of cross-level interactions (individual in aggregate contexts). Because research does not typically focus on interaction effects and because those that do have not consistently found statistical significance when they are tested there is little methodological precedence by which to base more specific hypotheses than that implied by the "Matthew effect". The related hypotheses mentioned above are based on the theoretical logic of the Matthew effect rather than systematic theory on each combination of variables in the equations. This part of the data analysis is therefore, somewhat exploratory in nature.
Hypothesis IV: The Mediating Effects of Capital on Serious Delinquency

Hypothesis IV: It is hypothesized that reading comprehension is a mediator between the endogenous variables in the model and delinquency. In other words, it is expected that many of the common “predictors” of delinquency are actually mediated by reading ability.

In this model, reading ability is conceptualized as a form of human capital and it will be determined if any of the exogenous variables in the model are actually having their effects on delinquency mediated through reading deficiency. Of course, a path model does not “prove” that a variable is a mediating variable, since the relative location of a variable in a path model is the researcher’s decision (hopefully based on existing theory). That is, whether a variable mediates or not is derived from theory rather than “tested for” in the usual sense of that term. For example, in the path models developed here, it is assumed that IQ (measured in 1992) is causally and temporally prior to reading comprehension in 1998. Thus, predictors of reading comprehension, such as IQ are posited theoretically as prior to reading comprehension, and delinquency is assumed to be caused by reading comprehension. Of course, empirically, reading comprehension may not mediate such effects if either the exogenous variable is not predictive of reading comprehension or reading comprehension is not predictive of delinquency.

In the earlier part of the statistical analysis, reading ability and other forms of capital such as social, cultural and physical are simply considered as independent variables, along with other variables such as race, number of kids in the home, gender, father’s presence in the home, mother’s education, sequencing ability and IQ. That is the direct effects of each variable, net of the effects of the other variables on delinquency, is assessed. However, later in the path analysis, reading comprehension is treated as a mediating variable between all of the other variables and delinquency. In that sense then, the path analysis will allow it to be determined if reading disability is a mediating variable in the explanation of more serious delinquent behavior. It will also
reveal what some of the predictors of reading ability actually are. It is assumed generally in the path model that social and biological conditions influence reading ability and then reading ability influences delinquency. For example, as referenced in the literature review section of this study, George Farkas’s research contends that cultural capital explains variation in reading ability. Therefore, some of the variation regarding race and literacy can be better understood via the mediating effects of cultural capital. Basically this dissertation is extending his research by suggesting that not only does cultural capital influence reading ability -- which helps explain racial variation-- but racial variation in crime and delinquency can be better understood given that there is covariation of race with cultural capital and delinquency. That is the relationship between race and delinquency/crime may be better understood when its effects are mediated through cultural capital and reading ability. It is important that the current analysis looks at more than the simple direct effects, and include tests for moderating and mediating relationships. In particular, it is expected that much can be learned, especially regarding the relationship between race and delinquency and gender and delinquency when this type of analysis is accomplished. It is expected that the magnitude of the effects of race on delinquency will be diminished when measures of inequality are controlled (i.e., variation in capital). It is well established in the literature that there is a positive correlation between being male and being delinquent. However, it is expected that the influence of gender will be better understood when it is determined how it is being mediated through forms of capital, as well as when interaction effects are considered. Specifically, it is expected that part of the reason that males are more likely to be involved in delinquency is because they generally fare less well in regards to reading ability, and therefore part of the influence of being male on delinquency is actually being mediated by reading deficiency.
CHAPTER THREE: DESIGN AND METHODS

The Data:

The National Longitudinal Survey of Youth (NLSY79) is a nationally representative sample of men and women born between 1957 and 1964. The 12,686 respondents were 14-22 years old at the time of their initial interview in 1979. Data about the respondents have been collected annually from 1979 to 1994 and biennially from 1996 to the present. Respondents are currently in their 30’s and 40’s and beginning in 1986 detailed information on all of the children of the female respondents has been collected. A battery of child cognitive, socio-emotional, physiologically and back ground information is available from the mothers and the children themselves, known as the NLSY79 Mother-Child Supplement. Beginning in 1988 NLSY79 children age 10 and older began answering a series of self-administered questions and starting in 1994 children who had reached at least the age of 15 are also surveyed in a supplemental questionnaire designed for “Young Adults”. Basically, the Mother-Child data provides a wealth of information regarding the child’s life and the child’s family. These data serve as the basis for the current dissertation (i.e., the children of the sample originally interviewed in 1979).

To most accurately assess one’s theory an original data collection that measures each variable of interest is optimal. However, this is rarely feasible. Therefore, acceptable data source alternatives are necessary to find. The NLSY 79 Mother-Child supplement of the NLSY79 affords the ability to assess the hypotheses of this dissertation. A preliminary look of the data reveals that enough assessments of each measure of “capital” are available to create appropriate scales. Necessary demographic
variables are available to serve as important controls, and enough measures of
delinquent involvement are available to create a delinquency index.

The NLSY79 data are rich with information related to the research questions in
this dissertation. The retention and response rates are very good with the NLSY79
surveys across the life course of two generations. Retention rates have exceeded 90
percent for the first 16 rounds and the last two rounds, 17 and 18, have retention rates of
about 85 percent. There has been approximately an overall 77 percent response rate in
the survey of the children of the 1979 original survey mothers. In the original sample in
1986, there were 5,255 children born to the NLSY79 cohort. In 2000, the number had
grown, allowing for the survey of 6,417 children. In 2002, a total of 7,567 children and
young adults are interviewed. While even higher response rates are desired, overall this
percentage of over 85 % is very good considering this is longitudinal data over two
generations of families.

The National Longitudinal Survey of Youth is part of a series of surveys
sponsored by the Bureau of Labor Statistics and the U.S. Department of Labor. The
administrative responsibility for the NLSY79 version resides with the Bureau of Labor
Statistics (BLS), which is an agency with the U.S. Department of Labor. BLS contracts
with the Center for Human Resource Research (CHRR) at The Ohio State University to
design the questionnaires and disseminate the data. The Census Bureau actually
collects the data from the respondents. The data collection for the NLSY79 Children is
subcontracted to the National Opinion Research Center (NORC) at the University of
Chicago.

For the National Longitudinal Survey of Children (NLSY79 Children) children of
military mothers and those children not living with their natural mothers are not included
in the sample which should be considered when reporting statistical results. Much of the
missing data is also explained understanding the eligibility of the children. Various skip
patterns based on age are common in the data. It should be noted that the exclusion of certain samples of respondents such as those unavailable for the survey because they were in the military or not living with their mother should be considered. For example, any statistical support for the presented hypothesis could be under-represented because some children and young adults could be living in incarceration facilities at the time of the study and this is why they were not living with their mother and eligible for survey inclusion.

Other sampling details important to report is that in the Young Adult survey in 1998 the sample was restricted to respondents older than 15 but not older than 21. In 2000, “young adults”, older than 21, were eligible again for the survey. In order to receive representative sample, Black and Hispanics are over-sampled; however in 2000, due to funding issues, the over-sampling did not occur. The entire minority child and young adult over-sample was again eligible for re-interview in 2002. Due to these issues and in order to obtain the largest sample size, the 2002 survey will be utilized as the base for the research models presented in this dissertation, and data from 2000 will be ignored. This survey year (2002) also assessed self-reported delinquency.

Because the dependent variable is delinquency only those respondents age 15-17 will be the unit of analysis. That is, to ensure that the proper ages are included the birth cohort from 1985-1987 will be the focus.

Users of the data can easily link child, young adult and mother data files because they are all part of the Mother-Child data set. By selecting the unit of analysis as those respondents in the 1985-1987 birth cohort one can ensure that the respondents who replied to the self report delinquency survey in 2002 are between the ages of 15 and 17. It also permits the use of supplemental survey data across various years for the same respondents. In 1998, the “1985-1987” birth cohort would be 11-13 years of age, in 1996 they would be between 9-11, in 1994 they would be 7-9 and in 1992 they would
have been 5-7 years old. Ideally, measures of “capital” will be assessed in the earlier years when it is likely to have the greatest impact on delinquency. For example, reading ability needs to be assessed when the child is older and has established their basic aptitude for reading, yet its assessment needs to come prior to the assessment of delinquency. Delinquency, in the Young Adult Supplement, needs to be assessed when the child is between the ages 15 and 17.

**Additional Information Regarding the Data:**

For the purpose of the current study several supplements of the NLSY data collection are important to note.

* The Mother -Child data are important because specific questions assess the maternal-family behaviors, attitudes, and social variables on the development of the children of the original NLSY 79 cohort. This will be important in assessing the social background characteristics of the child. Both mother and child are surveyed.

* In 1994 Children of the original NLSY79 cohort began to receive a separate questionnaire more suited for Young Adults, if the respondents are over the age of 15. Cognitive and socio-emotional development is assessed as well as delinquency, drug and sexual involvement. All “child” measures remain for these “young adults” but the “young adult” survey allows for even greater longitudinal assessment. This supplemental survey is referred to as the NLSY Young Adult Survey.

* In 1995-1996 a separate “one-time” survey of the schools attended by the children of the original cohort mothers was conducted. Officials from the schools of the children age 5 and older were interviewed and measures such as school structure, local community and parental involvement, student body composition, academic success of respondent and overall school characteristics are assessed. The school survey contains 375 related variables from about 3000 children of the mothers from the original cohort.
*Other areas of interest for the current analysis are: in 1992 children were assessed on the safety of their school and neighborhood, in 1994 parenting issues are the focus and in 1996 specific questions address the involvement of the parent in the kids' homework.

In this study, the mother data, the child data and the young adult data will be the focus. Since the data are longitudinal it is imperative that identification codes for the mother and the mother’s child are extracted from the data set. For clarification purpose it should also be mentioned that identifiers in the variable name signify which data are being used to compute new variable or measurement scales. Great lengths are taken to make sure that when new scales are computed the appropriate year and supplement are utilized. For the purpose of the current analysis, extreme caution is taken in using supplemental data to accurately assess the chronological order of events.

**Dependent Variable:**

The dependent variable consists of counts of the number of self-reported delinquent acts. Since crime and delinquency is a rare event with more respondents reporting no involvement, the dependent variable, will be logged to take into account its skewed distribution.

As for the data analytic strategy, first, a hierarchical regression strategy will be employed in which delinquency will be regressed on IQ. Then, in a second model, important demographic variables will be entered into the equation. In model three, reading acquisition will be added. In model four variables associated with each of the various types of capital will be entered into the equation and in the final model interactions terms will be included. These interaction terms represent products of the various types of capital, demographic and cognitive measures. The hierarchical approach to presenting the models allows for a comparison of coefficients across models, so as to see how they might change with the inclusion of new variables.
The dependent variable is a continuous level measure which is suitable for an Ordinary Least Squares regression analysis. That is, the dependent variable is the natural log of the sum of the following variables:

*Number of times last year that the child hurt someone badly enough to need bandages.
*Number of times in the last year that the parents were brought to school because of the child’s bad behavior.
*Number of times in the last year that the child skipped school without the parent’s permission.
*Number of times in the last year that the child stayed out all night without parent permission.
*Number of times in last year the child ran away from home.

Since several of the delinquency questions in the NLSY child data are basically assessing non-serious activity, of all the possible questions pertaining to delinquency, those of an extremely minor nature will not be used in the computation of the dependent variable. It is expected that a wide range of individuals engage in minor forms of misconduct such as lying to their parents and drinking alcoholic beverages. Therefore, considering the measures of delinquency that are addressed in the child sample of the NLSY, only those considered less common events--somewhat more serious in nature--will be used. Unfortunately, none of the questions asked of the child cohort tap extremely aggressive behavior.

Finding a data set that assesses all of the factors presented in this study has been challenging. While not perfect, the National Longitudinal Survey of Youth is very appropriate and OLS regression analysis is well suited for the data analysis. Ordinary Least Squares involves fitting a line to the data that is describing the relationship between the dependent and independent variables. OLS multiple regression estimates a line that minimizes the predicted error in the expected value of the outcome variable.
The unstandardized coefficients indicate the relative strength and the direction of the relationships between the independent and dependent variables.

**Capital Scales:**

The Mother Child data base provides a rich source for creating scales of “capital” because there is a plethora of questions related to each of these measures. That is, there are a sufficient number of questions related to each form of capital that can be used to compute the necessary scales. The scales are restricted to the related questions that are available to the 1985-1987-birth cohort. A preview of the data reveals that by limiting the data to this age group some of the available questions may be limited; however these data meet the criteria better than any other reviewed. Attempts will be made to work through data restrictions as best as possible. For review of the specific questions used to operationalize the variables, please refer to the charts below.

“Operationalizations”

**Reading Assessment:**

Is the child’s Reading Comprehension in 1998. The birth cohort would have been ages 11 to 13 and evaluates the actual reading score of the child.

**IQ:**

Is the child’s IQ score in 1992. The birth cohort would have been ages 5-7 during this survey year. This variable measures the intelligence level of the child.

**Digit Span (Sequencing ability)**

Is the child’s total standard score on the Digit Span assessment in 1996. The birth cohort would have been between the ages of 9-11 during this survey. This variable measures the sequencing ability of the child and is often used as an indicator of dyslexia.
Cultural Capital Scale

Each of the questions used to compute the cultural capital scale were asked of the children in 1998, the kids would have been ages 11 to 13 and evaluates the following: if the child has ‘musical instruments in home’, owns a computer, has family that reads the daily newspaper, receives special lessons, or is encouraged to participate in various hobbies.

Physical Capital Scale (Social Organization)

Each of the questions used to compute the physical capital/social organization scale were asked of the children in 2002, the kids would have been ages 15 to 17 and evaluates the following: 'in neighborhood people don't respect laws”, 'in neighborhood crime and violence are problems', 'in neighborhood there are abandoned buildings', 'in neighborhood there is not enough police', 'in neighborhood there are too many unsupervised kids', ‘in neighborhood people don't care”, ‘in neighborhood people can not find jobs’.

Social Capital Scale

Each of the questions used to compute the social capital scale were asked of the children in 1998, the kids would have been ages 11 to 13. This scale measures the parent-child communication and mother-child bond and evaluates the following: 'how much tell parents about teachers', 'how much tell parents about how spend money', 'how much tell parents about who you are with', 'how often tell parents about whereabouts', 'how much tell parents about homework', 'how close child feels to mom' and ‘how well mother and child share ideas’;

In order to have the highest sample size possible in the regression analysis, mean score substitutions for the missing values will be used along with dummy variables indicating which observations are missing values on given variables in a procedure recommended by Cohen and Cohen (1983). Since multiple survey years will be used
for the dependent variable, the sample was split by survey year to verify that no one year has unduly missing data. In 1985, there are 71 missing cases, in 1986 there are 69 and in 1987, 89 cases are missing. No one year seems to be of concern. While the operationalizations of the variables used in this analysis are described in the chart above, a detailed description is warranted for the main cognitive variables in the model. Therefore, the next several pages will reveal details related to the measures of reading comprehension, digit span (sequencing ability) and IQ.

**Focus Variable-- Reading Assessments:**

The reading assessment in the NLSY79 Children Survey is the Peabody Individual Achievement test (PIAT). The measure is widely known and used in research. According to the data overview, it is among the most widely used assessment of academic achievement having high test-retest reliability and concurrent validity. Reading recognition and reading comprehension assessment for children age 5 and older are assessed through these Achievement Scales. In the reading recognition test, children read a word silently, and then say it aloud. Eighty-four questions are asked, each with four options, which increase in difficulty from preschool to high school levels. Some of the skills assessed include reading single words aloud, matching letters and naming vocabulary.

The PIAT Manual states:

"In a technical sense, after the first 18 readiness-type items, the general objective of the reading recognition subtest is to measure skills in translating sequences of printed alphabetic symbols which form words, into speech sounds that can be understood by others as words. The subtest might also be viewed an oral reading test. While it is recognized that reading aloud is only one aspect of general reading ability, it is a skill useful throughout life in a wide range of everyday situations in or out of school" (Dunn and Markwardt, 1970 p.19-20).
Peabody Assessments become increasingly difficult as one moves beyond the early grades to appropriately measure the reading ability of older respondents. A more detailed description of the process can be reviewed in the public user version of the Child Supplement Manual and in the original Peabody tests.

PIAT reading assessments are administered to children over age five every two years. Three score are reported for the PIAT Reading Recognition: an overall non-normed raw score and two normed scores, a standard score and a percentile score. It is advised that the percentile score be used.

The PIAT reading assessments began in 1986. However after my review of the data manuals, I have confirmed the importance of using later assessments, not only because it makes more sense to the overall theory presented in this dissertation, but because problems that were identified with earlier surveys have been overcome in more recent assessment. Briefly, for example, there is a majority of “invalid skips” in the data from 1986-1992. Some children were inadvertently skipped even though they were the appropriate age for the assessment and some scoring rules were not followed properly during this time frame. Starting in 1994 most of the problems were corrected by the introduction of CAPI (“Computer Assisted Personal Interview”), technology which took the scoring decisions away from the interviewers and eliminated the problem with invalid skips because of the student failure to manually mark an answer. With the use of CAPI, and when the paper-pencil versions were eliminated, many of the earlier issues were resolved. The hand-held CAPI eliminates the ability to skip questions or leave an answer blank. Because it makes logical sense for the purpose of the theory and because of the problems identified with earlier PIAT scores, a later version will be utilized. Also in prior data, children with raw scores that translated to percentiles that were below the established minimum for the PIAT were assigned arbitrarily a score of zero this led to accidental misuse of the data because the “out of range” children were
being eliminated. After 1994 children who score below the established minimum are assigned percentile scores of one and those scoring above the maximum are assigned percentiles scores of 99. As will be noted in the discussions section of this paper, reading assessments are higher for the children of the NLSY sample than on the national average. One reason this could be true is due to the fact that these children have become accustom to standardized testing, surveys and questionnaires. Children not surveyed so often may not have this advantage. For example, as stated in the NLSY data manual a particularly strong analytical advantage derived from all of the PIAT assessments in the NLSY survey is the fact that respondents have completed numerous assessments.

For children in the sample age 13 to 14 PIAT assessments have been completed five times. This pattern of repeat assessments lends itself to more success over time, obviously students who have been accustom to taking the reading test will do better than the average population. This is mentioned in advance because the probability of higher scores due to a test-retest factor is important to consider in the statistical outcome. For example, if it is found that reading is correlated with delinquency, we already know that the sample that is being referred to is likely to score higher than the national average and will result in an under-representation of the strength of the relationship between the true association with reading and delinquency. In other words, should a statistical relationship be revealed in this study, the actual strength of the relationship is probably much higher for those unfamiliar with taking standardized reading assessments.

In addition to the Peabody Individual Achievement Test (PIAT) for reading recognition the data also assesses the Peabody Individual Achievement Test (PIAT) for reading comprehension. As with the PIAT Reading Recognition assessments Reading Comprehension is considered to be a highly reliable and valid assessment and is widely used in research. The focus of the test is to measure the child’s ability to derive meaning
from sentences that are read silently. For each of the 66 items of increasing difficulty, the child reads a sentence once and then selects one of four pictures that best describes the meaning of the sentences. The PIAT manual states that “while understanding the meaning of individual words are important, comprehending passages is more representative of practical reading ability since the context factor is built in, which plays an important role, not only in deciphering the intended meaning of specific words, but of the total passage. Therefore, the format selected for the reading subtest is one of a series of sentences of increasing difficulty. The 66 items in Reading Comprehension are number 19 through 84 with item 19 corresponding in difficulty with item 19 in Reading Recognition” (Dunn and Markwardt, 1970 p. 21-22).

The qualifiers are the same as the reading recognition in that respondents must be below the young adult age and older than five, but the difference is that the respondents of the reading comprehension has to score at least 19 on the Reading Recognition assessment. Children who score less than 19 on the reading recognition are assigned their reading recognition score as their reading comprehension score.

The PIAT Reading Comprehension Scores provide overall non-normed raw scores, normed percentile scores and normed standard scores. As was the case with the problems with the 1986-1994 reading recognition data, more recent versions will be utilized in this analysis to avoid statistical issues. For example, children who took the test during 1986-1994, who receive low raw scores, cannot be given normed scores because their scores were out of the range of the national PIAT sample used in norming procedures. Children then were assigned a -4 code on the percentile and standard score variables that led to issues in the data; however this issue was corrected in the more recent assessments. As is true with the use of CAPI in the reading recognition test, many problem issues were solved in the more recent assessments. This further underscores the importance of using assessments from a reading survey after 1994 and
since the sample is only between 7-9 years of age, it is likely that an even later year will
be used reflecting when the children are even older. The NLSY79 manual suggest that
those researchers interested the reading scores of children age five and six to limit
analyses to Reading Recognition, or to include age controls in one’s equation. Since the
reading scores of children at an older age will be used, it is not necessary to go into the
problems of the PIAT comprehension test for the younger kids.

In 1992 there is an 86% completion rate for PIAT comprehension, in 1994 and
1996 the rate is 90% and dipped again in 1998 to 88%; in 2002 the highest completion
rate has been noted reaching 91%. Since these completion rates are fairly high any of
the later survey years will be acceptable. Again, using a survey year after 1994 reduces
some of the data concerns and ensures that the birth cohort will be at an age that should
be old enough to know how to read. Ideally, it is best to assess reading at a date prior to
the year when delinquency is reported so a date after 1994 and prior to 2002 when the
dependent variable is assessed would be preferable. While it was considered to
combine the reading recognition and the reading comprehension into one measure, the
decision was made to utilize reading comprehension because it seems to be a better
measure of ability. It includes not only the ability to read, but the ability to read and
actually process what the text means.

Operationalization of other Cognitive Variables - More details:

Intelligence Assessment Scales:

According to the NLSY79 hand-book, the aptitude assessments used in the Child
surveys are selected based on their validity, reliability and suitability for use in large-
scale household surveys. Digit Span and overall IQ assessments are both utilized in this
analysis and will be described in more detail below.
Wechsler Intelligence Digit Span Index (sequencing ability):

The Digit Span score (sequencing ability) is a component of the revised Wechsler Intelligence Scales for Children. The test assesses the ability of children 7-11 to remember and repeat numbers sequentially in forward and reverse order (Psychological Corporation, 1974). In the Memory for Digit Span assessments, the child listens to and repeats a sequence of numbers that is said by the interviewer (forward order). In the second part, the child listens to a sequence of numbers and repeats them in reverse order. In both parts, the length of the sequence increases as the child correctly responds. Each correct response is worth one point with a total of 28 points eligible to be earned, 14 on the forward order and 14 on the reverse order.

The assessments result in three non-normed raw scores and one overall age appropriate normed standard score. The norm of the national representative sample has a mean of 10 and a standard deviation of three and review of the norms are available from the WISC manual.

The completion rates are similar to the other scales at around 90 percent and Baker et al., (1993) can also be reviewed for detail discussion of reliability. There is discussion in the literature that low digit span scores could be an indicator of mental handicaps and even dyslexia. Digit span assessments are often used to identify students in need of additional academic assistance.

IQ:

The Peabody Picture Vocabulary Test Revised (PPVT-R) is one of the most common measures of overall IQ. The PPVT comes from the American Guidance Service and is a wide range test used to measure the hearing vocabulary knowledge of children whose PPVT age is three and above. The survey year of 1992 will be used in this analysis when he children are between the ages of 5 and 7. Assessment complete
rates for the children exceed over 90%, and variation in completion rates by race and ethnicity are quite modest.

The PPVT measures an individual’s receptive (hearing) vocabulary and provides a quick estimate of scholastic aptitude. The English language version consists of 175 vocabulary items of generally increasing difficulty. The NLSY reference guide indicates that the PPVT-R is among the best established indicators of verbal intelligence and scholastic aptitude across the childhood ages.

Specifically, the assessment is administered by a reviewer reading a word and then the child is asked to select from one of four pictures that best describes the word. The child’s entry point is based on his or her PPVT age. Spanish versions have been available from 1988-2002 to those preferring to take the assessment in Spanish. Since Spanish versions are available it reduces concern of variance in race and ethnicity existing in the data because of testing problems. However, it is probably important to separate race into dummy variables in order to consider if effects could be masked if race/ethnicity were not separated. For this study race refers to Black, White and Hispanic.

Once a child has answered eight correct matches, a “basal” is established. If the child cannot establish eight correct responses in a row, a basal of one is given. A ceiling is established when a child incorrectly identifies six of eight consecutive items. The raw score is determined by adding the number of correct responses between the basal and the ceiling, to the basal score. The NLSY79 child sample has been normed against a 1979 national representative sample of 4,200 children and youth with a standard score mean of 100 and a standard deviation of 15. For example, in 2002 the NLSY child sample has a PPVT mean standard score of 99.6 and a standard deviation of 22. As recalled the mean of the PIAT is based on a norming sample from the 1960’s. The fact that the mean is higher for the NLSY children sample is probably due to temporal
factors; more contemporary populations used to assess means would likely result in more similarity.

While no single test alone determines the general level of intelligence, standardized tests scores are often employed in research. With the inclusion of variables such as digit span and PPVT IQ scores, elaboration is warranted regarding their use. While no assessment measures are perfect, these seem fairly valid indicators of the concepts to test in this research project.
CHAPTER FOUR: DATA ANALYSIS AND RESULTS

Models of Delinquency:

In this chapter, hypotheses discussed earlier are tested with data on the children of those mothers originally sampled in the 1979 study of the National Longitudinal Survey of Youth. As described in greater detail in an earlier chapter, these children were ages 15 to 17 in the year 2002, when measures such as delinquency were taken. They were 11 to 13 years old in 1998 when measures of their reading ability were assessed; and most of the other “capital” measures were assessed in 1996 or 1998. In 1996, the kids would have been between the ages of 7 to 9. Their IQ, however, was assessed in 1992 when the children were 5 to 7 years old. The goal has been to find measures of reading ability that, in temporal order, comes before the measure of delinquency.

Considerable attention was given to locating measures of capital that occurred prior to 2002 when delinquency\(^2\) was measured, and while committed attempts were made to assess all of the capital measures before the reading measure, in temporal order, this was not always accomplished. One of the impediments to accomplishing this was because of the inability to utilize the reading score from 2000. The original plan was to use delinquency in 2002, reading comprehension in 2000 and capital measures from 1998. It was not until after problems kept occurring in the data that a closer look at the original literature revealed weakness with the 2000 reading score. In lieu of this, caution should be used in discussion of causal ordering. For example, the desire would be to measure social organization prior to the 1998 reading assessment, however this was not feasible. Nevertheless, all variables measuring “capital” are considered causally prior to the measure of delinquency.

\(^2\) The measure of delinquency actually measures the offenses that the respondent admitted doing in 2001 (prior to 2002).
Sample Description:

The current project has a total sample size of 1,262. In some cases data are missing on some of the variables used to create the capital scales. Rather than eliminating the respondent from the entire survey because they had a missing question on the instrument, mean values for the missing variables are substituted.

In addition, a dummy variable was entered into the equations to represent these missing observations and to “correct” for some of the bias possibly introduced by the mean substitution (Cohen and Cohen, 1983: 286-289). In very large data collection efforts conducted year after year, such as the NLSY, occasionally a respondent will skip or fail to answer a question. List-wise or case-wise deletion in regression analysis could likely result in many respondents being eliminated from the study in the former, as well as potential sample selection biases. Case-wise deletion implies that the case base for different analyses within the current study could be different, depending on what variables were being studied. Therefore, to avoid these problems in this analysis mean value substitution is used in conjunction with missing dummy variables that measure the absence of valid values on the specific measures. The missing dummy variables are coded as “1” if valid observations were absent and zero if no value was missing. These dummy variables are then used in all regressions conducted in the analysis below (but are generally not reported in the tables as none of these dummy variables for missing data are statistically significant). They serve as “corrections” to the coefficients reported for the other variables in the analysis (Cohen and Cohen, 1983). The subjects that had the most missing data (although none are substantially high) are on IQ, mother’s education, number of kids in the home and father present in the home.
A review of the statistics show that the dummy variable for mother’s education was highly correlated with the other missing dummy variables, therefore, this dummy variable for missing data was removed from analysis in order to eliminate redundancy. As stated above, this strategy of dealing with missing data is recommended by Cohen and Cohen (1983:275-300) and ensures that the highest sample size be achieved and that data are not lost in the subsequent regression analysis. The size of this sample is large and justifies the use of linear regression statistics (Cohen and Cohen, 1983: 116-125). These “missing data control variables” are included in all regression equations, but, as mentioned above, are not reported on the tables because of the amount of information already presented in these tables. They have also been omitted from table presentation because none of the missing dummy variables are statistically significant in any of the data analysis.

Overall, the sample is slightly more likely to be male (52%) than female and, as coded in the original NLSY sample, there are 385 Blacks, 294 Hispanics and 582 Non-Black, Non-Hispanics (i.e., mostly white non-Hispanics) children surveyed. Recall minorities are over sampled in the NLSY. Thus, there are numerous minorities represented in the sample. For complete descriptions of all of the variables, refer to Table One.

SEE TABLE ONE – PAGE 171

In Table One means, standard deviations, and ranges for the variables in the model are reported. The variable of primary focus, reading comprehension (Peabody Individual Achievement test –“PIAT”), has a possible range from 1 to 99 and the mean score is 45.73, indicating that most respondents score in the middle range on the test. For the digit span score (Wechsler Intelligence Digit Span Index --sequencing ability),
the possible range is from 1 to 19 and the mean value is 9.94. For IQ (Peabody Picture Vocabulary Test Revised -- PPVT-R), the possible scores range from 20 to 160 and the average child has an IQ of 90.15. The average years of education completed by the mother are 12, which suggest that the average mother in the sample finished high school comparing equivalently to common patterns in the United States.

More children in the sample have their fathers living in their home than not. Of the total sample, 60.9% of the children have fathers present in the home. The average number of children living in the home is 2.53 corresponding somewhat above the 2004 U.S. Census report that the average number of children, living in the home, under 18, per family is 1.89.

Social capital, as measured here, assesses the level of communication and parenting involvement with child and bond between mother and child. The responses to the questions used to assess this form of capital are more likely to be in the affirmative. That is, more children report fairly strong communication to the parents and bond with their mother, rather than a weak relationship. The possible range for this computed variable is from 0 to 18 and the mean value is almost 14. As for cultural capital, which is measured as responses to questions pertaining to cultural exposure, the possible range of the computed variable is from 0 to 5 and the mean value is 3.08. As for the neighborhood of residence, most of the children live in areas that can be considered to be fairly “socially organized,” for the most part. That is, they live in neighborhoods where there is sufficient supervision, police, jobs and people who care about the community, etc. The possible range for this variable is from 0 to 14. A low score reflects social disorganization and a high score reflects a socially organized neighborhood. The mean value for this measure is 11.38, suggesting that most of the children live in moderately well organized neighborhoods.
Because it is known that crime and delinquency are actually rare events and that some individuals are likely to be dishonest in their reporting of delinquency involvement, it is common in research to have this measure fail to approximate normal distribution criteria. This is true in the current sample. Most individuals report on the survey instruments used to create the variable measuring delinquency that they have committed no offenses, while some report many offenses. To better approximate a normal distribution, the natural log of the variable is taken.

The correlation matrix is reported in Table Two. Regression models are presented in Tables Three, Four and Five. It should also be noted that for the regression models, Cooks D was reviewed and there are no apparent issues of unduly influential outliers affecting the data. Consequently, no cases were dropped from the analysis.

BIVARIATE ANALYSIS:

The intercorrelations among the variables in the model indicate that some relatively strong bivariate relationships exist. However, review of Table Two shows that none of the variables are highly or unduly associated with each other to the extent that the two correlated variables could not be entered into a regression equation without triggering collinearity diagnostic values (such as Variance Inflation Factor of 4.0 or higher). In other words, each variable appears to be able to contribute to the understanding of delinquency in its own way – although collinearity is assessed again later in the multivariate form in the regression analysis.

SEE TABLE TWO – PAGE 172

While gender is significantly correlated with delinquency (.193), in that males are more likely to engage in this type of crime, it is surprising that the accumulation of some
of the forms of capital are not correlated with being male or female. For example, it was expected, based on the literature review on reading variation, that females would have higher reading scores than males. This is not the case in these data. For example, the Progress in International Reading Literacy Study (2001) shows that on combined reading literacy scale that boys score 18 points behind girls. Perhaps gender differences are more likely to be noted when reading ability is measured differently than it is in this study. For example, it could be that more gender differences exist for reading recognition (the ability to read fluently) rather than reading comprehension (the ability to make sense of the text). In this study, reading ability has been measured as the ability to comprehend the text. Perhaps when reading ability is separated out in this manner there is less difference in reading comprehension scores for males and females.

It was also expected that variation in cultural capital would be correlated with gender, in that females would be more likely to be channeled into and embrace exposure to cultural activities. Perhaps this also is contingent upon the type of activities being assessed and is more reflective of the types of questions used to assess cultural capital in this model. For example, one of the questions used to create the capital scale is whether or not the child receives “special lessons”. This question did not separate out the types of special lessons that could be given and may also reflects extra curricular activities such as athletic instruction or some type of “special lessons” that is more common for males. Therefore, the lack of correlation noted between gender and cultural capital may be due in part to the way the variables are measured. Or it could be that the exposure to cultural capital could be equal for males or females. Regardless, in this study no gender differences are found, except in regards to delinquency. Perhaps when moderating and mediating effects are considered more gender differences will be found.

Because minority groups have historically been -- and continue to be -- disadvantaged in the social structure, it is not surprising to find that variation in capital, in
most forms, is significantly correlated with being Black. The only form of capital not statistically associated with being Black is Social Capital. Since this variable is the one measure most likely to be independent of any form of financial or structural advantage, this makes sense logically. Social capital in this study simply measures the mother bond and parent child communication level. And as can be seen from the non-significant correlation coefficient for social capital, the child’s bond to the parent and communication to the mother does not vary by race or ethnicity. For the other variables of “capital” that are more inclined to be affected by financial or structural issues, significant correlations are noted for race. Both reading comprehension (−.295) and IQ (−.343) are inversely associated with being Black, which is in alignment with some past research. For example, in the literature review section of this dissertation it was noted that African-Americans are less likely to do well on reading assessments. For example, Jencks and Phillips (1998) show that generally Blacks score 20% behind Whites. Others have noted variation in IQ levels for racial groups (Herrnstein and Murray, 1992).

Another form of intelligence is measured in these data, one’s sequencing ability (digit span), and no differences are found for whether or not the respondent is Black. As advocated by many, part of the weakness in standardized testing, especially IQ assessments, is that cultural variation could be responsible in part for variation in scores. As the critical literature on this often provides the example, if one is not exposed to what a “composer” is then one is less likely to fair well on related questions on standardized assessments and these such exposure can vary by socio economic status which also may be tied to race and ethnicity. How well one does on standardized IQ measures may be reflective of the type of exposure that one has had. Also, if we refer back to the literature on reading acquisition, linguistic variation may be responsible for some of the variation in the ability to learn to read effectively (Farkas, 1990). If variation in speech exists for Whites and Blacks then this could in part explain some of the variation in
reading ability. Nevertheless, since it has been identified that Blacks are more likely to have reading deficiencies, it will be very interesting to find out if reading deficiency is a mediator to delinquency.

Some interesting bivariate correlations are found in regards to being Hispanic. First of all, being Hispanic is not correlated with delinquency, social capital, social organization, father living in the home, number of kids; nor is it correlated with reading ability. The later may seem somewhat surprising that being Hispanic is not correlated with reading ability because in the above paragraph it was just discussed that linguistic variation may contribute to reading failure. Two things should be noted, we do not know if Hispanics in this population are recent immigrants or not. Those who have been in America for a generation or two, or who are taught the English language early may not have linguistic barriers that influence their ability to learn to read. Also, it should be remembered that Hispanic respondents in this survey were given a reading assessment in Spanish if they so desired. We do not know what percentage of the Hispanic respondents choose this option.

There are correlations, however, between being Hispanic and one’s IQ score (-.120), sequencing ability (-.085), cultural capital (-.162) and mother’s level of education (-.146). That is, the effect of being Hispanic results in lower levels of these other variables.

In the literature review of this dissertation it is found that increased numbers of children in the home is often associated with disadvantage. This has been validated in the correlation matrix. Increased number of children in the home is positively correlated with delinquency; but is inversely associated in all of the other relationships in the model. As the number of children in the home increases, cultural and social capital decreases, although the correlations are small (-.083 and -.088, respectively). Lower educated mothers are likely to have more children; but the number of kids in the home is not
statistically correlated to whether or not the father lives in the home. Even the 
respondents’ reading ability and IQ are inversely associated with number of kids in the 
home: as number of siblings rise, IQ and reading comprehension drops (-.128 and 
-.224, respectively). While there is some research that suggests that birth order is 
associated with IQ, we do not control for the chronological order of the child in this study. 
And perhaps it is the case that other factors, besides innate ability, also account for 
one’s level of IQ. Sequencing ability (digit span), on the other hand, is not correlated 
with number of kids in the home. Again, perhaps this measure of intellectual ability is 
one that is less contingent upon social and societal factors and is more reflective of 
innate ability. It is also suggested in the literature that sequencing disability is 
considered a possible symptom of dyslexia, so it will be interesting to see how this 
unfolds in the path analysis that will be conducted later.

If the father lives in the home of the child all forms of capital for the child are likely 
to increase. Most of the variables in the correlation matrix are positively correlated with 
father’s presence, with the exception of the bivariate relationship with delinquency. 
When the father does not live in the home with the child, then the child’s delinquency is 
likely to be higher. Also, there is an inverse relationship with father living in the home 
and race. For Black respondents there is a greater likelihood that father’s will not be 
living in the home (-.311). Reading comprehension (.228) and IQ (.249) are positively 
associated with father living in the home as are all of the other measures of capital. 
When fathers are present, the child is likely to live in more socially organized 
neighborhood (.183), when the father is in the home, cultural capital of the child, as is 
social capital of the child, is also higher (.251 and .074, respectively). There is even a 
statistically significant positive correlation between higher education mothers and 
father’s living in the household (.159).
Mother’s Education is also positively correlated with most of the other variables in the matrix except delinquency, number of kids and being Hispanic. Lower educated mothers are more likely to have children who engage in delinquency. Lower educated mothers are also more likely to have an increased number of kids in the home, and Hispanic mothers are less likely to have higher education. All of these correlations are consistent with general theoretical perspectives. The correlation most likely to be in need of discussion is the correlation between mother’s education and being Hispanic. However, when we remember that not only are Hispanic families more likely to be patriarchal, in that the women are still likely to be more “domesticated” and follow traditional roles of mother and homemaker, most are disadvantaged economically in American society which can also contribute to variation in educational attainment for the mothers.

Since the regression analysis that will be conducted in this dissertation will include all three measures of cognitive ability, it is important to look at the bivariate relationships that they have with each other. All are positively correlated: reading comprehension and IQ are moderately correlated (.495); digit span and IQ are positively correlated (.307) as is reading ability and digit span (.335). It can be safely assumed that when one has a better IQ one is likely to fair better on the reading comprehension assessments. It is also fairly safe to assume that if one can read well one is more likely to perform better on standardized IQ testing. Because these two variables are moderately correlated, caution will be used in the regression analysis to ensure that multicollinearity among the three variables is not a problem. Since the usual point of concern for collinearity issues between two variables is roughly .8 or above, depending on the source, then there is somewhat less concern in allowing all of these variables in the same regression equation. Additional tests for multicollinearity are also done testing for correlations among multiple independent variables.
Of all of the bivariate relationships presented in the model, only two are not significantly correlated with delinquency: being Hispanic and digit span score (sequencing ability). Reading ability, IQ, cultural capital, social capital, social organization, mother’s education are all inversely correlated with delinquency. Positive correlations with delinquency are found for being male, being Black, and if the father is not living in the home. There is also a positive relationship noted between number of children in the home and delinquency. Delinquency is likely to increase with higher numbers of children in the home.

The strongest bivariate correlation with delinquency is with respondents who live in socially disorganized neighborhoods (−.225). In that when respondents live in socially disorganized neighborhoods they are more likely to report involvement with delinquency. It is also interesting to note that reading deficiency is more strongly associated with delinquency than is IQ (−.161 compared to −.143, respectively). As these forms of human capital increase, delinquency decreases.

The general theoretical direction and literature review regarding the variables in the model are reaffirmed to a limited extent in the correlation matrix, taking note to the couple of exceptions. Given the relatively small magnitudes with the interrelationships, no problem with multicollinearity would be expected in the regression analysis to follow (and in fact none were found among the variables measuring the “main effects”).
MULTIVARIATE ANALYSIS

SECTION ONE: DIRECT EFFECTS (Regression Model Results):

Below several models of delinquency are presented in a hierarchical fashion. That is, some variables of interest are entered first, and then others are added to see how the regression coefficients and explained variances change as a result of adding variables that are often correlated with those previously entered in the model. In general, variables representing effects that are unconditional are entered prior to testing for conditional or interaction effects. The various regression models are presented in Table Three.

SEE TABLE THREE – PAGE 173

Because Hirschi and many others have long argued that IQ is an important determinate of delinquency, and because the general argument here is that reading ability is a more specific form of human capital and possibly an alternative measure to IQ, the decision was made to enter IQ into Table One first (Model One), with standard demographic controls following (Model Two). Because part of this current research project is suggesting that reading acquisition is just as -- or more -- important than IQ, reading acquisition is entered after IQ and demographic characteristics (Model Three).

The results show (Model One) that as IQ declines, more serious forms of delinquency increases (Beta=-.140, p < .05, b =-.006). As such, the results indicate a weak linear, additive relationship between IQ and delinquency, as indicated by the modest standardized Beta effect of .140.

In Model Two of Table Three, race and gender are added to the model and it is shown that IQ remains significant (Beta=-.095, p <.05, b =-.004). With these three
independent variables in the model all are statistically significant. Males are likely to be more involved in delinquency (Beta=.182, p< .05, b = .264), being Hispanic (Beta= .109, p < .05, b = .187) and being Black (Beta=.115, p< .05, b = .181), compared to White, are positively associated with delinquency. The standardized effect of IQ drops somewhat to -.095, as would be expected due to some correlation between IQ and race/ethnicity, but it is nevertheless still a significant predictor of delinquency.

In Model Three, reading acquisition is added to the model (Beta=-.090, p < .05, b= -.003). While reading comprehension is significant, IQ becomes statistically insignificant. This first prompts one to consider issues with multicollinearity between the two variables. As stated earlier, the Pearson’s correlation for IQ and reading comprehension is .440. Because there is some correlation between IQ and reading comprehension, it is understandable that the effects of one might be cancelled out by the other. At the same time the extent of the correlation between IQ and reading comprehension is not sufficient to disallow a test of both variables simultaneously, as the multicollinearity is not high. Multicollinearity is frequently deemed problematic if the Variance Inflation Factor (VIF) is above 4.0 or tolerance factors are below a .25 cut off point, as suggested by (Belsley, 1990, 1991). Note that the tolerance of a variable is simply the mathematical inverse of the VIF. The multicollinearity tests indicate that it is safe to test both variables in the model, yet the moderately high correlation of the two will undoubtedly reduce the effects that either variable can have on the dependent variable.

In Model Four of Table Three another series of variables is added to the regression model. These variables all reflect variations of capital (social and cultural) and other important control variables. The total model predicts about 15% of the variance in more serious forms of delinquency. Even with all of the controls in the model males are more likely to engage in delinquency (Beta=.189, p < .05, b= .275). Having
lower social capital is associated with an increase in delinquency (Beta=-.019, p< .05, b = -.077). Basically, the mother-child bond and communication seem to be an important deterrent for delinquency. More well educated mothers have children who report less involvement with delinquency (Beta=-.063, p< .05, b=-.020); also when the father of the child is living in the household, there is less delinquency reported (Beta=-.109, p< .05, b =-.166). There is a positive relationship between number of children living in the household and delinquency. As the number of children increase so does delinquency (Beta=.065, p < .05, b =.042). When social organization of the neighborhood is higher, delinquency is reduced (Beta=-.209, p< .05, b = -.050). And while the Beta coefficients are small, even with all of these controls in the model, reading acquisition is still a significant predictor of delinquency (Beta=-.061, p < .05, b = -.002). This coefficient indicates that as reading comprehension rises, delinquency decreases. What is somewhat unexpected in the model is that “digit span” (sequencing ability) a cognitive test that measures of the ability to remember numbers in sequential order, is positively associated with delinquency (Beta= .097, p < .005, b = .024). It was initially anticipated that this would be an inverse relationship with those scoring higher on digit span hypothesized to report less involvement with delinquency. However, the data show that an increase in the digit span score actually results in a greater likelihood that the respondent will report more involvement in delinquency. A plausible post hoc explanation for this positive relationship can be provided. Digit span assesses the ability of children to remember and repeat numbers sequentially in forward and reverse order. The measure of digit span has long been used to assess handicapped students that are in need of additional support. Since this measure is often used as a test to assess potential “problem” students, those that are deficient on the digit span test are likely to receive extra attention from parents, teachers, physicians, and support personnel. Such extra attention is not measured in our data base, nor included in the models, and may
serve as a buffer against delinquency. Sequencing ability (digit span) is thought to be an indicator of dyslexia, so perhaps those that score well on digit span are less likely to have a common disorder that deters the ability to read well. The underlying process might be that those who are dyslexic have worse reading scores and less involvement with delinquency because of the added attention they receive from parents, teachers, and others, for their disability. However, we do not know in this analysis who actually receives extra academic support.

It is interesting to note that when all of the independent variables are controlled in the model, race and ethnicity are reduced to non-significance. No longer does being Black or Hispanic have significance as predictors of delinquency. This is an important finding in and of itself. This suggests that what is going on in the home and environment is more important than one’s race, and the finding lends itself to stressing that models of delinquency that find statistical relationships of race should include the necessary control variables.

So far the statistical analysis has revealed some interesting findings. Namely, that reading comprehension has significant effects on delinquency net of all of the other variables in the model; “digit span” has a positive effect net of controls, as does gender and measures of capital. Race and ethnicity losing statistical significance, once controls of “inequality” are entered, is also important.

The above analysis looks at the direct linear, additive effect of the independent variables on delinquency. Many researchers have argued that it is also important to look at how the relationships between independent and dependent may be moderated by other processes (Jaccard et al., 1990). That is, the effects of a given variable may vary with the values of other variables. While the above regressions have found that certain demographic, capital and cognitive variables are important for the explanation of delinquency, it is also possible that the effects of the various variables are themselves
affected by other variables tested in the model, as hypothesized under the general auspices of the "Matthew effect"—those with relatively high forms of available "capital" benefit from other forms of "capital". That is, for example, the effect of reading comprehension, cognitive skills, social or cultural capital on delinquency may vary as a function of the value of the other forms of capital as well as with race, gender, mother’s education, father’s presence in the home, or number of children in the home.

The theoretical basis for testing for interaction effects is discussed earlier. Methodologically, it is in part based on the assumption that relationships among variables are not additive (the more x, the more y), but rather the effects vary as a function of—or because of—the values of other variables. It is possible, for example, that the effect of the capital variables (human, social, cultural) may vary depending on the race of the child. On the one hand, one might expect that black children might benefit less from more human, social or cultural capital because of mechanisms such as discrimination or negative labeling “interfering” with the hypothesized benefits of these forms of capital in reducing delinquency. IQ may affect delinquency less for Blacks than for Whites because Blacks experience discrimination that interferes with the preventive effect that IQ has on delinquency generally. Another mechanism by which race might change the effect of IQ on delinquency is on the generally poorer quality of education experienced by the Black child, mitigating the benefits of IQ in reducing delinquency. Similar arguments can be made for gender (IQ may benefit males more than females), and age (the younger child may respond more favorably to the various forms of capital). While there is not a well-defined literature on what specific interaction effects should be hypothesized, there are general considerations such as those mentioned—"Matthew effect"—as to why interaction effects should be tested.

Below, cross-product terms were calculated between all of the independent variables and tests are conducted to see if there are any two-variable interaction effects.
That is, rather than hypothesize specific interaction effects along the lines of the
discussion above, all of the bivariate interactions were computed and tested. As such,
the method is susceptible to the criticism of Type I errors: many interactions are tested
for and one might expect with a .05 alpha level that 5 of 100 of them would be Type I
errors (the null hypothesis of “no effect” is wrongly rejected). This possibility is
discussed more below. While some others have tested for specific interactions and
reported statistically significant interaction effects, here the approach is taken of testing
for all two-way interactions. Whereas up to now, all the variables discussed were
entered in the equations and the coefficients reported, with the tests for cross-product
terms, a “forward entry” statistical test is first done in which the cross-product term with
the highest partial correlation with the dependent variable is entered first assuming that
the F value is sufficiently high. Here, the probability of F to enter is .05 or less. Then the
cross-product term of the next highest partial correlation is entered, assuming the
probability of the F test is less than .05. Thus, only those cross-product variables that are
statistically significant enter the equation (whereas in the earlier equations all variables
were entered into the equation), and the statistically significant as well as the statistically
insignificant ones remain in the equation, and their collinearity diagnostics examined. If
they trigger the collinearity diagnostic of a VIF of 4.0 or greater, they were removed from
the list, and the equation was re-estimated. The final product of this procedure is the
respective regression coefficients reported in the tables. The use of the forward entry
procedure is employed in part because of the difficulty for bivariate interaction effects to
be found in empirical research. Measurement error is confounded when product terms
are calculated, such that the error of the product term must be greater than the error of
either of the variables used to calculate the product term. Also, as stated earlier, product
terms are often correlated with the variables used to produce them, as well as with other
product variables.
SECTION TWO: Interaction Effects: (A Test for Multiplicative Terms)

In Model 5 of Table Three the influence of interaction effects is addressed in the regression equations. For all but the dummy variables, the original variables in the model have been centered at the mean to reduce possible multi-collinearity and to make simpler the discussion of the effects of the coefficients (Jaccard et al., 1990). It also should be mentioned that ultimately the statistical tests are conservative because, as reported by Jaccard et al. (1990) when there is potential for any measurement error, it is often difficult for the researcher to find statistically significant interaction effects because the measurement error of the product term is compounded relative to that of the original variables used to compute the cross-product term. For example, if two independent variables are uncorrelated with unequal reliabilities, the reliability of their cross-product term will be lower than the lower of the two reliabilities of the original variables (Jaccard et al., 1990:38). That is, the reliability of the cross-product term will tend to be lower than the reliability of the variables used to create the product term. In general, the lower the reliability, the more attenuated the correlation with the dependent variable. It is likely that there are additional statistical interaction effects that cannot be detected because of the issue of low reliabilities. Despite the difficulties associated with testing interaction terms, several significant interactions are detected in the current analysis.

Model 5 in Table Three includes three interaction terms that are found to be statistically significant using the “forward entry” strategy described above. Recall that in the procedures followed the original variables are entered in the equation and then only the cross-product terms that meet the criteria of the forward entry procedure are entered (probability of F less than .05 and the largest partial regression coefficient of the product terms tested is entered at each step). The fact that only three interaction effects were found out of the 64 tested is disappointing, because we would expect to find a few by chance (5 of 100). Nevertheless, interpretations will be made of the interaction effects
found. To the extent to which the interaction effects are consistent with existing theory, our confidence in the possibility that future research will find the same interaction effects is bolstered. Because so few of the interaction terms are statistically significant, it is also possible that some or all of the interaction effects represent Type I errors.

As stated above, the implication of finding interaction effects means that the effect of a variable is a function of the value of another variable. While this sounds simple enough, interpreting the results can be very cumbersome. In Jaccard et al. (1990) the process is explained clearly, however. They state that in the absence of an interaction effect (no product term in the equation), an unstandardized correlation coefficient, b, in OLS regression is interpreted to mean that the effect of b for independent variable X on dependent variable Y is the number of units that Y is predicted to change given a one-unit increase in X when all other independent variables are held constant. This is the interpretation given b when no interactions are present. That is, a regression coefficient estimates the effects of the independent variable (X1) on the dependent variable across the levels of the other independent variables (X2): b1 represents the change in Y with changes in X1 at each level of X2. One could say it is a “general” effect. When interaction effects are considered in the model, however, the interpretation is a bit more complex since the effect of an independent variable, X1, is a function of another variable, X2. That is, a significant product term (a variable consisting of X1 multiplied by X2) indicates that the effect of X1 is moderated by X2, and vice versa: the effect of X2 is moderated by X1. In models with significant interaction terms the b1 effect of X1 represents the effect of X1 when X2 is zero, and b2 is the influence of X2 when X1 is zero. The b1 effect is the effect of X1 when X2 is at the mean (at the average, or zero here since the data were “centered”, that is the mean was subtracted from the original value). Thus, the effect of X1 and of X2 varies with the value of the other independent variable. To restate, when the variables have been centered
(subtract the variable from the mean), then the so-called “main effect” of a variable is actually the regression coefficient observed when the moderating variable is zero (“average” since the variable has been centered on the mean). The effect of variable X1 when X2 is not zero is somewhat more complex. It is useful to speak of the expected value of Y (the dependent variable) given various values of X2, the moderating variable. The expected values of Y can be calculated by summing the constant in the equation with the b1, b2 and b3 effects, where the b1 effect is the “main effect” of the independent variable X1, b2 is the main effect of X2, and b3 is the effect of the product term (X1 x X2). Values of Y are often computed and reported at various values of the moderating variable, X2, such as one standard deviation above the mean, the mean, and one standard deviation below the mean.

Also, it should be noted that it is not proper, as pointed out by Jaccard et al., (1990: 34), to interpret the Beta’s for the interaction terms as computed in statistical programs, such as SPSS, because they represent standardized effects of cross-product terms rather than the effects of variables that are standardized and then multiplied by each other. Therefore, for clarity, the models below have been re-estimated using z-score transformations of all variables (including the dependent variable) so as to achieve proper estimates of the standardized coefficients (the unstandardized coefficients reported are from the original analyses). Since the variables are now standardized before interaction terms are computed we can speak in terms of “properly calculated” standardized coefficients in Model 5. Another form of standardization, inter-quartile range effects, is also reported in Model 6 and will be discussed later.

When interaction terms are considered in the standard OLS equation, some interesting relationships appear. There were 66 cross-product terms computed, one for each of the independent variables listed, i.e., there are 12 independent variables so there are approximately “11 factorial” interactions tested or 65. (Actually, it is 11 factorial
minus one). With so many cross-product terms, it is likely that there will be substantially many multi-collinearity problems if the cross-product terms are all entered into the equation. To address this problem, a “forward selection” procedure for all product terms is used, in which all product terms are considered but only the significant ones are entered in the regression model, with the largest entered first. Then, the models are refitted and the next highest statistically significant interaction term is admitted. This process is continued until all of the statistically significant and independent (VIF’s less than 4.0) product terms are entered in the equation.

Now we turn to the results. When all interactions are considered, the effect of IQ (the so called “main effect” or “first order effect”) is statistically significant -- it was not in Model 4; but now IQ’s effect on delinquency varies as a function of whether or not the father lives in the home. When product terms are included, one cannot speak of a general effect of IQ but rather how the effects of IQ vary as a function of whether or not there is a father in the home. That is, in Table 3, Model 5, it can be seen that the IQ of the child actually has an effect on delinquency that is moderated by the presence of the father in the home. The “main effect” of IQ (here the effect of IQ when the father is not in the home) is -.006. That is, the self-reported delinquency of the child declines by .006 with each unit increase in IQ in homes where there is no father present. Stated another way, declines in IQ in “fatherless homes” results in an increase in delinquency, with each IQ point decline generating .006 delinquency.

Now, in general the father’s presence in the home reduces delinquency, as is evident by the -.143 unstandardized coefficient. Note that the -.143 coefficient is the effect of the father in the home when IQ is average (here zero because the variables are centered). So, in the home of the child with average IQ the father’s presence is associated with a .143 decline in delinquency. The cross-product term of “father in the home and IQ” is a positive coefficient (.006), so that one can speak of IQ having less of
a reductive effect in homes where the father is present than in the homes where the father is not present, by the amount of .006 (i.e., equivalent to only a one point drop in IQ). So, essentially the effect of IQ is negated for the child in the home with a father present. This is what Cohen et al. refer to as a “compensatory” effect. Either IQ or father presence in the home reduces delinquency, but together their net effect is less than would be expected if their effects were additive (first order effects only).

Graph One below shows the effect of IQ by whether or not the father lives in the home of the child and mother. The graph shows that the effect of IQ is negative for children with no fathers present in the home; the lower the IQ the more likely that the child will engage in delinquency. Where there is a father present, low IQ does not have any effect on delinquency. Rather the father present in the home essentially “compensates” for the low IQ, presumably through greater supervision of the child in the two parent home, or greater attachment (to two parents instead of one), or some other unspecified mechanism. Note that above a certain level of IQ, the IQ is actually more preventive of delinquency in the fatherless home than would be the case with the father present. This point is approximately at 22 points above the average delinquency (just above one standard deviation above the mean of IQ). However, it should also be noted that a relatively small percentage of the children in no-father homes have IQ's more than 22 points above the mean. For example, none of the children have IQ scores of 122.

The highest possible range for IQ in “no father” homes is 143 and 1.2 % of the total sample score between 124 and 143. That is, there are relatively few children observed near the upper end of the IQ distribution with no fathers in the home, such that it would
be unwise to assume that IQ of the child in the fatherless home actually can benefit the child more than the hypothetical presence of a father. Thus, caution should be exercised in making the assumption that the effect of IQ continues beyond the point where there are few observations on which to base the estimate of the regression line; (this is a general “problem” with regression analysis, but is an especially common limitation of interaction terms (Jaccard et al., 1990: 27).

Other significant interactions are also present in the data. For example, when “reading comprehension” and “number of children in the home” is computed as a multiplicative term, the coefficient is significant and positive ($B=.068$, $p<.05$, $b=.002$). Since reading comprehension has a significant inverse effect on delinquency (as reading scores go up, delinquency decreases) and number of children has a positive effect (as number of children in the home rises so does the level of delinquency), the multiplicative term could be interpreted as a buffering effect. In general, with the addition of each child in the home, delinquency increases as is evident by the coefficient of .052 in Model 5, but this is lessened somewhat if the child is a good reader. It can also be stated from Model 5 that reading efficiency decreases delinquency as can be determined by the unstandardized beta coefficient of -.002. As reading scores improve delinquency decreases. Since the product term is positive, the coefficient can be interpreted in the following manner: the reductive effect of reading comprehension on delinquency is buffered (has less of an effect) by the number of the children in the home.

Graph Two below shows the moderated relationship between reading comprehension and delinquency across number of children in the home.

SEE GRAPH TWO – PAGE 177
As can be seen in Graph Two, generally reading comprehension reduces delinquency at average or below average number of children in the home. However, when the number of children is one or two standard deviations above the mean, the effect of reading scores on delinquency actually increases the chance that the child engages in delinquency. (Note that results are presented for only one standard deviation above or below the mean of reading, as there are no observed cases two standard deviations above or below the mean of reading comprehension). At first glance this finding seems odd or even counterintuitive. In large families (approximately 5 children), reading ability at the high end (1 standard deviation above the mean) leads to approximately .2 more serious delinquent acts than in the average size family of the exceptionally good reader (one standard deviation above average). As with the earlier example, however, caution must be exercised because in large families there are few children with reading scores more than one standard deviation above the mean. For example out of the total sample, there are only seven respondents that score one standard deviation above the mean on reading comprehension and have five or six siblings living in the household. No one scored this high in families with over 6 siblings. So while these relationships are interesting, they actually very rarely occur. However, a possible explanation of the positive association between reading comprehension and delinquency in children living in large families is that the relative lack of individual parental attention in large families – essentially an “anomic” environment, or relatively unsupervised environment – leads the more verbally skilled child to get into trouble. There is some precedent in the literature for there being a positive relationship between intellectual ability and delinquency (Glueck and Glueck, 1968) although studies showing a positive relationship specifically between reading comprehension and delinquency are rare. The general idea is that a certain amount of verbal skills can be conducive to crime/delinquency in terms of leadership skills in a delinquent peer group, or even
“rationalization” skills (Sykes and Matza, 1967). In the current context, the lack of supervision essentially “allows” these verbal skills to be used for criminal/delinquency purposes.

It should be reiterated that for a child with an average number of siblings an increase in reading score actually results in a reduction in delinquency by .002 per point in reading skills. So, what we could refer to as a “normal” situation in regards to the amount of children living in the home, better reading comprehension is associated with a reduction in delinquency. When it comes to delinquency, the beneficial effects of literacy are negated somewhat by increased children in the home, and in the large family reading skills might even be conducive to crime/delinquency.

Much of the literature draws attention to the fact that increased number of children results in less capital, supervision and attention for the child, as mentioned earlier in this text. Basically, when there is a large number of kids in the home resources are often more limited. One-on-one attention from the parent to each individual child is likely to be less when there are more kids in the home so regardless of human capital skills, number of kids in the home is an important consideration.

The third interaction found in the prediction of delinquency also involves IQ, only this time IQ interacts with being Hispanic (B=.066, p < .05, b = .006). The effect of being Hispanic on delinquency is moderated by one’s level of IQ. Graph 3 shows the relationship between IQ and delinquency for Hispanics and non-Hispanics (Whites, since the variable for Blacks is controlled for in the model). The effect of IQ in reducing or facilitating crime is found among Whites but not Hispanic families.

Graph Three below shows the effect of IQ for Hispanics and Whites on delinquency.

SEE GRAPH THREE – PAGE 178
Note, however, that the average level of delinquency for the Hispanic child is higher than that of the average child (.60 logged delinquency acts is the sample average), and higher than the average White child. Yet, IQ has no effect on crime for the Hispanic child (nor the Black child, as being Black is also controlled for in the equation).

Note that the effect of being Hispanic on crime drops substantially when the controls of “capital” are included in the model. When this is done, being Hispanic is not a significant predictor of delinquency and neither is IQ. However, when cross product terms are considered the influence of IQ is moderated by whether or not one is Hispanic. Said differently, the effect of being Hispanic on delinquency is conditional upon one’s level of IQ. More interesting is the statement that the effect of IQ is found only for the referent group, Whites. IQ has a preventive effect on delinquency, net of all of the other variables in the model, if one is White. This may be indicative of the better “prospects” for the White child, who sees his/her future as more promising because of his/her intelligence. For Black and Hispanic children, however, this is not the case, as IQ has no “benefit” here regarding delinquency.

In summary several important significant relationships have been identified. It is especially interesting to note the significant interactions effects observed in the prediction of delinquency. Each of the interactions has involved either a cross-product effect with IQ or with reading comprehension. While there were 65 interactions tested as they influence delinquency, it is very interesting that the only three that are statistically significant are involved with the two variables of primary interest in this study (most product terms tested did not have reading or IQ involved in the cross product terms). Although it is possible that these interactions represent Type I errors, it may also be possible that these are important interaction effects that allow for a more clear understanding the relationships between IQ and delinquency as well as between reading
comprehension and delinquency. In other words, how the relationship between father in the home, number of children and being Hispanic on delinquency is moderated by either reading comprehension or IQ is suggestive of dynamics that are quite plausible.

*Interquartile Range Effects:*

In the above discussion regarding interaction effects, we relied on unstandardized coefficients. However, it is difficult sometimes to compare variables’ effects when measured in different metrics. Whereas standardized Betas are generally useful, another form of standardization, so called “interquartile range effects”, (IQR) (Quillian, 1995) may be more robust across samples because the interquartile range is more likely to be similar across samples than the standard deviations, which are sensitive to extreme values. Interquartile range effects are calculated and are provided in Model 6 of Table three. The effects are also presented in Table 5. IQR effects allow examination of standardized effects of the variables-and thus comparison of variables’ effects -- by showing the change in the dependent variable when the independent variable moves from average low ranges (25th percentile) to average high values (75th percentile). While the coefficients presented up to now represent the change in a dependent variable given a one unit change in the independent variables, the interquartile range effects can provide a better understanding of how the variables of interest are influencing delinquency because it can be determined what the effects are when values in the independent variable change from lower quartile to upper quartile. Up to this point, the coefficients have represented a one unit change in the independent variable on delinquency. By calculating interquartile range effects, it can be determined what the effects of the cognitive measures are when one scores the average poor score compared to when one scores the average high score. This is especially interesting considering the variables of primary interest: reading comprehension and IQ. The reader is reminded that the dependent variable has been logged and ranges from zero
to 2.56. Also note that if a variable has no IQR, and a value of 1 is assumed to be the effect for comparative purposes with the IQR effects, and is reported as such in Model 6 (e.g., the effect for Hispanic is .103 for the \( b \) and the same effect is reported in the column for the IQR effect.

In Table 3 Model 6 a trimmed model is presented with IQR effects presented to the right of the unstandardized \( b \) coefficients. Note that when Black was dropped from the model, cultural capital became statistically insignificant (it was significant in Model 5), so both are omitted from Model 6.

What will be commented on here are the relative magnitudes of the effects. The variable with the largest IQR effect is the social capital variable. The IQR effect is -.294 and is followed by the effect of being Male (.267). The variable with the next highest IQR effect is the social organization of the neighborhood in which the child lives (IQR of -.208). Thus, the various social measures (social capital and social organization) along with gender are the best predictor variables in the final equation. This speaks to the importance of gender and social attributes in the explanation of delinquency.

Interestingly, the next most important variable is having the father in the home with an effect of -.155 (the effect of the dummy variable, and it is conditional in that it holds true for the child of average intelligence). The next three most important predictors of delinquency are IQ, being Hispanic, and reading comprehension, with IQR effects of -.150, .103, and -.090, respectively. Note however, that these too are “main effects” as all three variables are involved in interaction effects, reported on the bottom of the column. Since the interaction effects have been discussed at length above with the discussion of the unstandardized coefficients, no attempt will be made here to discuss them again at length. The main IQR effect for IQ is essentially the effect we would expect in the homes of the single parent (father absent) White children, while the main effect for Hispanic is for the Hispanic child of average IQ, and the effect of reading
comprehension is for the average size family. Under those conditions, we can “compare” the IQR effects, and see that the human capital measures while not as important as the social capital, social organization and familial variables, nevertheless are substantial and unique predictors in the model.

**Summary of OLS Regression findings:**

The OLS regression models, mentioned above, have been presented hierarchically or in stages. By presenting the models in this way, each stage represents a more complete analysis and a clearer picture emerges regarding what is occurring in the data.

Overall, the model has identified variables that are statistically significant predictors of delinquency. Most of the main effects of the variables are consistent with past research in the field of criminology. The most important variable seems to be the social capital of the child. That is, the bond of the child-mother is the most powerful predictor of all the variables in the equation. This speaks to the importance of a traditional social control theory measure: attachment. Social capital, as it is operationalized in this research, is conceptualized as the parent-child bond and level of communication. The regression results confirm that children who have better established relationships with their parents are less likely to engage in delinquency. This has been consistently well established in the literature and aligns with theories of social bond. Whether or not the father is living in the home is important net of all of the other variables as well. While research reports variation in the actual importance of father living in the home, this current analysis reveals that it is, in fact, important. On the average, when there is no father present, there is more delinquency. Also, when the family has a higher number of children, delinquency is likely to increase. Certainly, in order to truly assess this effect it would be important to control for level of income (unfortunately, such a measure is lacking in the data base). Some parents may be able
to better afford, supervise and nurture their children than others, and number of children may be less important if these controls existed in this model. Nevertheless, as the model exists it is suggestive that there is a decreased ability to monitor individual level behavior when an increased number of children are present in the home. It also could be suggestive that available resources, in all forms, are reduced with the presence of increased number of children. These findings tie in closely with work related to capable guardianship and diminished resources.

Another important, although not unexpected, finding pertains to gender. It is well established, for example, that males are more likely to be involved in more delinquency and the model shows this relationship holds even in the presence of several controls. The variable has the second largest effect of all the variables in the model. Also important is the neighborhood. Children who report living in socially disorganized neighborhoods are more likely to be involved in more delinquency. Or, better stated, social organization in the neighborhood decreases more serious forms of delinquency. This aligns with previous work in criminology, especially social disorganization theory.

The level of mother’s education is also predictive of delinquency in the expected direction: as mother’s education increases delinquency decreases. However, the effect is relatively small.

Thus far, it has been shown in general that there are some interesting findings related to cognitive measures (especially in regards to the mediating influence of reading comprehension and IQ), interaction effects (later it will be developed how these are generally in support of the Matthew effect hypothesis) and race. As for the latter, race has consistently been found to be a predictor of criminal and delinquent behavior. And the common assumption for some (mostly outside of academia) is that there is something inherent about minorities that leads to a greater likelihood of criminal behavior, especially for Black males. Herrnstein and Murray, for example, proclaim that
Blacks have lower IQ’s and that is the primary reason that such relationships to criminal behavior exists.

Note what happens in the models when “capital” measures are entered into the model. It is true that when only IQ, gender, Black and Hispanic are included in the model each are significant predictors of delinquency. However, when “capital” measures and other cognitive measures are included in the model, being Black is no longer statistically significant in predicting delinquency. (Being Hispanic does not either, until an array of interaction terms are included). Part of the direction of this dissertation has touched upon the over-representation of minorities with crime/delinquency and in correctional facilities. When proper controls are in place, being Black diminishes to statistical insignificance as a significant predictor of delinquency, as it is measured in this model. How other measures of capital interact with race and ethnicity are important considerations, as are the mediating effects reading comprehension.

While some attention has been given in the field of criminology to the influence of reading deficiency, the focus has been very limited (Brunner, 1993). More often theories such as social bond that include academic assessments in their models measure some form of IQ. Consistent with the theoretical position of this dissertation, while the coefficients may be small, reading deficiency is nevertheless a significant predictor of delinquency, net of all of the other variables in the model. It is also interesting that once reading is entered into the regression equation, the influence of IQ became non-significant. This suggests that either reading comprehension mediates the effect of IQ or perhaps reading and IQ are essentially “equivalent” in their causal status. Because the correlation confirms that the two variables are moderately correlated (.440), it may be that only one or the other will be predictive of delinquency, but not both in the same model. In order to provide an even more critical test of the data, regression models have been run with reading, digit span and IQ analyzed separately in the regression.
While it is a more complete analysis to leave all of the “academic” variables in one model, there is the potential that IQ assessments and reading assessments are canceling each other out because of their moderately high correlation with one another. Therefore, some sensitivity analysis is warranted in the form of additional models. Table Four represents these separate regressions of each cognitive measure on delinquency.

SEE TABLE FOUR – PAGE 174

Across the three models in Table Four, each of the three human capital or “intellectual capability” variables is included in one of the models, while the other two are omitted. As can be seen the effect of each of these variables is similar to that in Model 5 or Model 6 in Table 3. So the fact that these variables are moderately correlated does not seem to affect the magnitudes of their effects in the models.

Rather than reporting all the coefficients for each of the above three models, the reader can refer to Table Four, models 1-3; the basic point to be highlighted is that reading and IQ are both important predictors of delinquency in their own way. If reading and IQ are in fact simply two measures of the same condition, one would expect them to act similarly and could be used inter-changeably. On the other hand, both variables may be important indicators in and of themselves.

As for the interaction effects in the models of Table 4, the exclusion of IQ has an effect on which product terms are significant. More specifically, two of the three found when all of the variables are in the equation are again found when only IQ is in the equation (IQ x father in the home, and IQ x Hispanic). With reading comprehension in the equation, number of children interacts with reading comprehension. When only digit span is in the equation, there is a Black x digit span interaction (-.034).
Overall, neither measure of cognitive ability explains a significantly greater proportion of the variance in delinquency. Each model only explains 15 percent of the variance, which leaves a lot of variance unexplained. It is fairly safe to assume, however, that each cognitive measure taps a unique type of ability and that each form of ability may contribute to understanding various types of delinquency better.

Thus far in the analysis it has been shown that reading comprehension has a statistically significant effect on delinquency, net of numerous other factors often associated with delinquency. IQ and a second measure of intellectual capability, sequencing ability, are also shown to be related to delinquency, net of these same other variables in the models. Despite the moderately high correlation among these three variables, each variable has an independent effect, and the magnitude of each variable’s impact on delinquency is not influenced appreciably by the presence of the other human capital variables in the equation.

It also has been shown that forms of social and cultural capital are also related to delinquency in ways consistent with expectations. Also the mother’s education and family size are important, as is father’s presence in the home. More interesting perhaps are the interaction effects found. IQ is found to have a reductive effect on delinquency in the child’s home when fathers were absent. In such homes, the lower the IQ the more the delinquency. Similarly, among white children, as opposed to Hispanic/Black, IQ has a similar effect: the lower the IQ, the more the delinquency.

The effect of being African American is not statistically significant, at least once social characteristics such as social and cultural capital are controlled. Finally, it was found that family size mitigates the effect of reading comprehension on delinquency: only in small families does reading comprehension have the valued effect of reducing the likelihood of delinquency (and in large families the reverse pattern is found). It is surprising that more quantitative research had not been conducted/found regarding the
relationship with reading ability and delinquency. Perhaps investigations that had been conducted found diminished support, therefore studies have not been “written up.” Perhaps this connection between number of kids in the home and reading ability has not been considered and proper controls have not been in place. The beneficial effect is found in homes with average to fewer children in the home. These “controls” are important to consider and probably have not been considered.

To assess the data even more thoroughly, the following analysis will consider the mediating effects of human, cultural and social capital on delinquency. That is, by imposing assumptions about the causal order among several of the independent variables, a better understanding of the interrelationships among the various theories as measured may be achieved. In the path models below, reading ability in 1998 is posited as an intervening or mediating variable between IQ and several other exogenous variables in relation to delinquency. Furthermore, social and cultural capital are argued to be mediating the relationship between several exogenous variables and reading comprehension, which in turn mediated their impact on delinquency. Thus, in this next section, indirect or mediated effects of various variables on delinquency will be examined, whereas thus far only direct effects have been the focus. An argument of this study is that what is going on in the home contributes to the failure of the child to learn to read efficiently. And when the child fails to learn to read the ramification of this is likely to lead to more serious forms of delinquency. Therefore, an even more complex picture of the interrelationships among variables can be presented through the use of path analysis.

SECTION THREE: Path Analysis

In order to examine if variation in social capital (bond), cultural capital (exposure) and one form of human capital (reading comprehension) serves as mediators to delinquency, path analysis using a series of ordinary-least squares regression equations
is employed. Path analysis is an extension of multivariate regression, but allows the networks of causal effects to be better examined and mediator variables to be assessed. Indirect effects involve mediator variables that transmit a portion of the effect of a prior variable onto a later one. The following path analysis will be demonstrated in a series of steps. First, direct effects on the mediating variables are calculated by utilizing OLS regression statistics. Once the direct effects are known, indirect effects in the chain can be calculated by multiplying the direct path coefficients by each other. Total effects can be calculated by summing the direct and indirect effects for each presented path in the diagram.

Before the path diagram models are described, Table Five represents the OLS regression models when one form of human capital, reading comprehension, is the dependent variable, when social capital is the dependent variable, and when cultural capital is the dependent variable. Less attention will be given here to describing specific details of all of the coefficients in these models, as the reader can review the table if interested. The coefficients for the main effects will be discussed later with the path diagrams. Because we omit from the path diagrams the explicit presentation of the interaction effects, mention will be made subsequently of the significant interactions found in the equations. Moreover, the interaction effects represent one of the main storylines of the analysis.

In the path analysis below, several variables will be treated as exogenous variables, predictive of all other variables in the model (endogenous). It is posited that the exogenous variables are: IQ, Hispanic, Black, male, father in the home, social organization of the neighborhood, mother’s education, number of children, and sequencing ability. The two capital variables are defined as intervening between the exogenous variables and reading comprehension in 1998, social and cultural capital. Finally, reading comprehension is posited as being affected by the social and cultural
capital variables, as well as by the exogenous variables mentioned above, as well as the mediating variables of social and cultural capital, and has a direct effect on the delinquency of the child. In Diagram 1 the path model is shown.

SEE PATH DIAGRAM MODEL ONE – PAGE 197

Path Analysis Model One:

Model One of Table Five represents a standard model with race, IQ, gender, mother’s education, number of kids in the home, father living in the home, social organization, and digit span entered as exogenous variables. The cultural, social and human capital variables are conceptualized as mediators between all of the exogenous variables, and both reading ability, and delinquency. This way, the various avenues can be assessed and the actual influence of the ‘earlier’ variables on reading comprehension as well as delinquency can be better appreciated. Since the interest here is in all three types of human capital, all are included in the path model (separate path models for each “academic ability” are not presented). The models for the path analysis are estimated with the product terms included in the regression equations so coefficients represent general effects (when interactions effects are not found) or they represent the effects for the child “average” on the moderating variable (when interaction effects are found). However, the Model One Path Diagram does not include a “visual” representation of the product terms; including them made Model One Path Diagram very hard for the reader to see all of the relationships clearly, so they are omitted (of course the coefficients for the product terms are represented in the tables). Models Two through Model Five path diagrams present the regression coefficients for the interaction effects for all of the measures with moderated effects (that is, at least one product term
was found to be statistically significant in the regression analysis). It should also be mentioned that for the calculation of standardized effects that the data have been transformed (standardized) using z-scores. This follows recommendation of Jaccard et al., (1990). In Model One, variables that are involved in interactions terms are marked with an asterisk such that the reader will know that they represent the effect of that variable only when another variable (or variables) is at the zero value (the mean here).

Based on the theory presented in this dissertation, it is hypothesized that delinquency is being caused in part by dynamics of inequality, namely variation in various forms of capital. These variables are in turn being influenced by the exogenous variables represented in the model. Because a “cause” must precede an effect, the time order of variables must be established in the construction of a path diagram. Path analysis does not confirm nor reject the hypothetical casual imagery; therefore theory is the driving force in casual ordering. Certainly, argument could be made for alternative causal orders than that being presented. Little argument, however, can be made over the exogenous variables of race and gender. These variables are indicative of social processes present early on in the individual’s life course. Also we have long known that these two variables are correlated with crime. Race and gender clearly come before delinquency and clearly come before the mediator variables being presented in this analysis. Theoretical argument can be made that mother’s level of education, father’s presence in the home, and number of children in the home influence the child’s level of social and cultural capital, as well as reading comprehension. So the causal order of these exogenous variables is correctly specified. One variable of dispute however would be the variable measuring social organization. One could question whether single parenthood, higher number of kids and mother’s education comes before social organization or whether social disorganization encourages there to be more mothers with less education, fathers absent from the home as well as greater number of children
living in the household. Moreover, socially disorganized neighborhoods could draw or attract single parent families, or less educated or larger families. In reality this relationship may be reciprocal. To simplify the analysis, and to be conservative in regards to the interaction effect of the other exogenous measures, however, social organization will also be treated as exogenous here.

Just as a theoretically based decision is made regarding whether social disorganization should be conceptualized as a mediating variable or an exogenous one, so too is the decision to conceptualize reading acquisition as an endogenous variable (recall that it is measured in 1998 -- later in time than the more exogenous variables in the mode). Some may disagree with the causal ordering. However, reading comprehension is not entirely a born trait. It is fostered and influenced by many factors outside of the biological capabilities of the child. It could be that various forms of capital actually influence one’s ability to learn to read, which in turn influences delinquency. Therefore, reading ability will be to the second last (penultimate) near to the “far right” in the path diagrams (only delinquency is more endogenous than reading ability). This ordering of variables is to determine if—and the extent to which-- the various relationships to delinquency are being mediated through reading deficiency.

As mentioned earlier, Path Diagram One reflects the various effects (coefficients) when interaction terms are included in the model, but the latter are not shown in the diagram for presentational clarity. Later separate path diagrams (Model 2 through 5 of the path diagrams) are shown with the interaction effects to help see how they fit into causal ordering. For clarity it is probably beneficial to discuss the statistical findings for the interaction terms involved in the paths. Note that the interaction effects directly affecting delinquency directly were discussed in some detail in the tables above. However, the interaction effects for the cultural and social capital variables, as well as for reading comprehension, have not yet been discussed. While it is logical to discuss the
mediating effects here, all of the moderator effects (interaction effects) will be discussed first.

_interaction Effects:_

As earlier for delinquency, the same method of using “forward selection” is employed to test for significant interactions among the predictors of the intervening processes. All interactions are considered, but only the significant ones are entered in the regression model. As in the earlier analysis, there is a danger of Type I error.

As for the interaction effects, when reading comprehension is the dependent variable, two interactions are significant. It can be seen (Model 3 of the path diagrams or Table 5 –Model 1) that the IQ of the child has an effect on reading comprehension that is moderated by the presence of cultural capital. IQ on reading comprehension is also moderated by the presence of number of children in the home. The “main effect” of IQ (here the effect when cultural capital is at its average, which is zero because the variables have been centered) is .344 (.238 Beta). That is reading comprehension of the child increases by .344 with each unit increase in IQ among children who have “average” exposure to cultural capital. The “main effect” of cultural capital is 3.07 (.142 Beta). That is, reading comprehension of the child increases by 3.07 points with each unit increase in cultural capital for children who have average IQ scores. Regardless which variable one chooses to interpret as the moderating variable, when both conditions are present the respondent is likely to have better reading scores. The cross product term of IQ x Cultural Capital has a positive coefficient of .077; so, for example, one can speak of IQ having a greater effect on reading comprehension when cultural capital is higher. More simply, “the rich get richer” in that those rich in cultural capital and intelligence are even more likely to have high reading comprehension. Support is again found for the Matthew effect.
The effect of IQ on reading comprehension is also moderated by the number of kids in the home. As previously mentioned the ‘main effect’ of IQ on reading, as discussed above, is .344 when there are an average number of children in the home. The “main effect” of number of children in the home is -1.43 indicating that when IQ is average each additional child results in a 1.43 reduction on reading scores. The cross-product term of IQ x Number of Children is a negative effect (-.076) so that one can speak of IQ having less of a positive effect when the number of children in the home is higher. Thus the benefits of IQ on reading comprehension are reduced in larger families. Again, support is found for the Matthew effect.

It can be recalled in the literature review section on the process by which we learn to read that the increased number of kids in the home is correlated with a reduction in reading ability so these findings are consistent with existing literature and reflects on the fact that learning to read is partly a social process that requires presumably teacher as well as parental attention. Having increased number of kids in the home diminishes the positive effect of one’s IQ on reading ability. This evidence is suggestive that learning to develop reading comprehension is in part a social process.

In Table 5, Model one the total model explains almost 30% of the variance in reading comprehension (28.8%). The explanatory variables as a whole are fairly good predictors of reading ability. When it comes to the predication of social capital, however, the variables in the model are not very predictive. Table 5, Model two only predicts about 4% of the variance in social capital and most all of this comes in the way of product terms (although this is not shown directly in the table). There are three significant interactions (see also the results for Model 4 in the path diagrams), two of these are involved when the respondent is Hispanic. Being Hispanic has an effect on social capital that is moderated by the number of the children in the home and also moderated by whether or not the father lives in the home. The cross-product term for
Hispanic x number of kids in the home is a negative coefficient (−.342) or a −.050 Beta effect. If the coefficient for Hispanic is added to the unstandardized coefficient for the product term (−.294 and −.342 = −.636) it can be seen that in Hispanic homes each additional child results in a .636 reduction in social capital. What this means is that in Hispanic homes the presence of more children is likely to result in less time spent with the child, perhaps even specifically less time is spent reading to the child(ren). This effect can be classified as a synergistic effect between Hispanic and family size, resulting in less social capital than would be the case of each variable only had a first order effect (Cohen et al., 2003).

The effect of being Hispanic on levels of social capital is also moderated by whether or not the father lives in the home. Basically, it can be said that the effect of being Hispanic on social capital is less when the father is not in the home. The effect is −.294 on social capital when the respondent is Hispanic and the father does not live in the home. Generally, when the father lives in the home social capital is higher as can been seen by the unstandardized positive coefficient of .490. That is, social capital increases by .490 when the father is in the home for non-Hispanic respondents. However, when the respondent is Hispanic the positive effect of father in the home on social capital is actually reduced by 624 (.490 − .294 = .820). The question is why does the presence of the Hispanic father negate the social capital benefits otherwise attributable to a father in the home? Perhaps the presence of both parents in the Hispanic home is more often characteristic of a traditional, patriarchal Hispanic family in which the child’s bond to the mother is somewhat reduced in that there is a “shared” parental relationship, whereas in the single parent Hispanic home, the attachment can only be with the mother. (This suggests that attachment has some “zero sum” characteristics). Again, since research suggests that Hispanic families are more likely to be patriarchal, perhaps when the father is home the bond and communication between
the mother and the child is less, because of the father’s presence (i.e., an intact patriarchal home -- recall that social capital measure is primarily a measure of the social ties/communication with the mother). However, when the father is not present in the home the mother-child relationship is likely to be stronger. Again, recall the scale used to compute social capital is taken in part from questions used to assess the level of communication between mother and child.

There is one other interaction involved with social capital and that is the cross product term of being Black and sequencing ability (digit span). The effect of sequencing ability on social capital is moderated by whether or not the child is Black. The “main effect” of sequencing ability on social capital, is a positive coefficient of .098. Generally, a higher digit span is associated with more social capital. The “main effect” of sequencing ability on social capital, when the respondent is scored zero (not Black), indicates that a one unit increase in digit span results in a .098 increase in social capital. However, the cross product term is -.223 so one can speak of digit span having less of a positive effect on social capital for Black respondents. Again, this is a type of buffering effect in which a positive outcome (social capital) is less likely to occur for a disadvantaged group (Blacks). Said differently, when we add the coefficient for digit span to the coefficient for the cross product term we can see that the actual effect for being Black is -.262 given a one unit change of sequencing ability for Blacks (.098 -.137 -. .223). Sequencing ability somewhat oddly, reduces social capital for Blacks. This effect is difficult to explain. But apparently having a higher digit span score is detrimental to the parent bond and mother child level of communication for African-American families. Or, said more positively, for those with higher digit span scores (which taps a form of intelligence--short term memory) the parents are less likely to communicate with the child about homework, teachers, whereabouts and so forth. Perhaps, for reasons not entirely clear, the Black child with high sequencing skills is
more independent of the mother, as the sequencing skills may foster a self-concept of efficacy that may encourage the child to be more independent. As can be recalled from the way the variable was measured, one of the questions used to tap communication is talking specifically about school. Perhaps for the gifted child there is less concern to discuss matters of academics in the African American household.

As for the effects on cultural capital, there are five significant interactions (Model 3 of Table 5 or Model 5 of the Path Diagrams). The effect of IQ on cultural capital is moderated by the number of the kids in the home. The “main effect” of IQ on cultural capital (when the number of kids in the home is zero, because the variables have been centered) is .009. That is, the cultural capital of the child increases by .009 with each unit increase in IQ in homes when there are an average number of kids in the home. Also, the “main effect” of number if kids in the home (here when the IQ of the respondent is average) is .015. In other words, the cultural capital of the child increases by .015 for each additional child when the respondent has an average IQ. Note that this would be one of the rare instances when having more children in the family has a beneficial effect. For kids who have average intelligence the addition of extra kids in the home does not result in a negative influence on the dependent variable as it has in the past regressions. In fact, more children actually increase the opportunity for cultural capital exposure for average intelligence children. It makes sense that when there are more kids in the home there is a greater likelihood of such things as musical instruments being in the home. Interestingly, the product term is also a positive coefficient of (.004) suggesting that higher IQ and higher number of children actually results in more cultural capital exposure than the additive effect indicated by the main effects. Thus, the relationship between IQ and family size is synergistic regarding the generation of cultural capital. Presumably, the more children in the home the more “reasons” for having various forms of cultural capital in the home. If IQ is partly genetic, then the siblings are also likely to
have higher than average IQ’s. Thus, the addition of children with higher IQ’s is more likely to result in more opportunity for cultural exposure for all children in the home. So in this regard there are spill over effects for children when there are higher intelligent kids in the home, in regards to cultural capital.

Another interaction involving cultural capital is between social organization and IQ. The IQ of the child has an effect on cultural capital that is moderated by the level of social organization. The cross-product term is a positive coefficient .001 so that one can speak of IQ having more of an effect on cultural capital when social organization is also higher (again, another example of a “synergistic” effect). Since both of the “main effects” are also positive, the interaction basically follows suit to the Matthew effect that “the rich get richer”. Higher IQ combined with “better” neighborhoods is likely to result in more cultural capital.

The IQ of the child also has an effect on cultural capital that is moderated by whether or not one is male or female. The “main effect” of IQ (here the effect when the child is female) is .009. That is, the cultural capital of the child increases by .009 with each unit increase in IQ, for females. The cross product term of IQ x Male is a negative coefficient, -.052, with a -.049 main effect for males, so that one can speak of IQ having a negative effect on cultural capital, for males. Generally, this makes some sense since it is known that males are less likely to be interested in cultural/musical events. The magnitude of the interaction effect is much stronger than the magnitude of the main effect of IQ (the effect of IQ for women), so that IQ actually results in less cultural capital in the home for males. Perhaps at this age level, the more intellectually gifted males are channeling their energies and attention on sports or other activities not indicative of “cultural capital” in the sense the term is used here.

In regards to the five significant interactions on cultural capital, two interactions are involved with race. It can be seen that the effect of being Black on cultural capital is
moderated by the level of social organization in the community and also by whether or not the father is living in the home. First, the product term of Black and social organization will be discussed.

The “main effect” of social organization on cultural capital (here the effect when the respondent is not black) is .072. That is, with each unit increase in social organization there is a .072 increase in cultural capital, for non-Black children. However, there is less of a positive effect of social organization on cultural capital for Black children. The cross-product term of “Black x Social Organization” is negative (-.048), as is the main effect for being Black (-.092). Thus, one can speak of a buffering effect of being Black on social organization’s impact on cultural capital. When being Black is combined with low social organization in the neighborhood, cultural capital is less than it is for Whites in low social organization neighborhoods. However, as more positive values of social organization are observed, the net result in the black family on cultural capital is positive (“beneficial”) since the .072 main effect of social organization is larger than the -.048 interaction effect. Another way of stating the interpretation of the negative interaction effect is that in the African American community social organization may have less “payoff” in terms of cultural capital than in the white communities. Thus, the African American community not only has lower levels of cultural capital, but cultural capital increases less from community organization than in the white community. Two reasons for this outcome are probable. Perhaps the way that cultural capital is measured in these data does not reflect the kinds of cultural capital that are valuable to minorities. There is a great deal of research written on this issue suggesting that studies that incorporate measures of cultural capital should consider this possibility (DiMaggio and Ostrower, 1990; Kalmijn and Kraaykamp, 1996). Also it may be that perhaps there are more complex issues of relative and absolute deprivation that should be considered. The disadvantages of being a minority in a stratified society are compounded more when
they live in a socially disorganized community when it comes to being exposed to
cultural opportunities. It obviously would be more difficult to hire someone to provide
musical lessons, for example in highly disorganized communities. This is also
compounded by the fact that persons in these communities are less likely to have the
financial means to do so anyway. In White communities, the socially disorganized
neighborhood effect is less of a deterrent to achieving cultural capital exposure for the
children. Social structure factors should definitely be considered in regards to this
interaction; but the outcome is supportive of the interpretation that being a minority and
being in a socially disorganized neighborhood hampers the accumulation of cultural
capital. Again, this aligns with the Matthew effect.

The last interaction to be discussed here is not surprising, given the other findings
in the study. The effect of the father living in the home on cultural capital is moderated
by whether or not the child is Black. The “main effect” of father living in the home on
cultural capital (here the effect when the child is not Black) is .412. That is, the cultural
capital of the child increases by .412 when the dad lives in the home, for non Black
children. However, for Black children there is virtually no effect (actually a small
negative effect) of father’s presence in the home in regards to cultural capital (sum the
main effect of being Black, the main effect of father in the home, and the interaction
(-.092+.412 -.328 =-.008). So, being Black buffers the beneficial effect of the father
being present, reducing it substantially. There are some plausible explanations for this,
as mentioned earlier we have already noted that males (of any race -- even fathers) are
less likely to be interested in cultural capital to begin with and as already pointed out
there may be difference in what type of cultural exposure Blacks value; and perhaps the
measures used to assess cultural capital in this study simply do not interest Black
families as much as they do White families. Since we are talking about the fact that
males are less interested in cultural capital to begin with, and since we have mentioned
that Blacks may be less interested in the types of cultural capital as measured in this dissertation, it makes sense that by combining the presence of Black, and male influence in the home, the child has less exposure to the type of cultural capital measured within. Basically Black fathers may be less likely to encourage such exposure -- as it is measured in this current analysis. Stated another way, cultural benefits of a father in the home are essentially not extended to the Black family. Perhaps this speaks to the strength of the adaptation of the Black female head of household, who perhaps places more value in types of cultural capital measured here in this study.

Also, it should be considered that this analysis does not control for employment of the parents. Should the father be unemployed, additional burdens are placed on the family and extra activities such as private lessons for the child is a luxury that is simply not realistic. To truly assess this interaction a good measure of unemployment is probably important. Since it is well known that Black males experience higher unemployment rates than Whites, perhaps this control needs to be in place before we can accurately make sense of the interaction.

*Interquartile Range Effects:*

In addition to discussing the interaction effects, it can also be useful to discuss the relative magnitude of the effects of the various variables when we standardize by the interquartile range (again, under the assumption that the IQR effects will generally be more stable across samples than the Beta effects). While all of the Interquartile Range Effects can be referred to in Table Five (Models One, Two and Three), some of the more substantively significant findings are provided below. As mentioned earlier these effects show the change in the dependent variable when the independent variable moves from average low value (25th percentile) to average high values (75th percentile). While the coefficients presented up to now represent a one unit change in the independent
variables, the interquartile range effects can provide a more stable estimate of how the predictor variables are influencing social capital, human capital and cultural capital. For example, when sequencing ability (digit span) goes from average low to average high values, the reading score increases by 6.82 points. The influence of this variable is particularly important because sequencing ability is thought to be predictive of not only short term memory, but of dyslexia (i.e., the low digit span scores may be indicative of dyslexia). As mentioned earlier in this dissertation there are likely many causes of reading deficiency that range from genetic and biological issues to social and cultural conditions. The focus of the dissertation has not been on tapping these causes; but the path analysis allows for a look at the relationships under the assumptions of the modeling done here. If it is found that reading deficiency is a mediating condition to delinquency, then attention to the factors that influence literacy are important to note. Fortunately, the independent variables included in this analysis cover a fairly wide spectrum. Sequencing ability allows attention to be given to reasons for reading struggles that are more biological in nature, as does IQ. For example, when IQ goes from average low to average high (when there are an average number of children in the family and cultural capital is average) reading scores increase by 8.60 points. As already noted being Black and having an increased number of children in the home is associated with reading comprehension struggles. Specifically, when the number of children changes from average low to average high numbers (and the child has average IQ), then there is a 1.43 reduction in reading scores.

The variables used to assess cultural capital have a strong influence on reading ability. When cultural capital moves from the 25th percentile to the 75th percentile, there is a 6.14 increase in reading comprehension (when the respondent has an average IQ). Again, George Farkas (1991) has written on the influence of cultural variation on reading ability and notes cultural and linguistic variation explain some of the racial variation
noted in regards to literacy. It is particularly interesting to note that racial variation is often noted in models of delinquency and crime. Racial differences are also noted in regards to reading ability and in regards to cultural capital. Perhaps much of the variation in crime by race can be better understood from this path: minorities (Blacks) have lower cultural capital, which contributes to greater reading struggles, and greater reading struggles contribute to increased delinquency/crime -- this can also be buffered by the number of kids in the home and the father’s presence in the home. The investigation of the path analysis will reveal more about this. It is also very interesting to note that in this study social organization is not significantly predictive of reading comprehension. Something other than socially disorganized neighborhoods contributes directly to variation in reading comprehension. However, it can be seen from Table 5, model 3, that social organization of the neighborhood does influence cultural capital, and we know that cultural capital influences reading comprehension. For example, possible scores for cultural capital ranges from 0 to 5, and when social organization moves from average low values to average high values (when the respondent is not Black) there is a .288 increase in cultural capital. The contribution of social organization on cultural capital is also contingent upon one’s level of intelligence. For example, when IQ rises from average low to average high (when the social organization of the neighborhood is average) there is a .225 increase in cultural capital. So, while social organization of the neighborhood does not influence reading comprehension directly, it does have moderating influences.

Path Analysis Results:

In the analysis below, path diagrams are presented in which cultural and social capital, as well as reading comprehension/deficiency are depicted as intervening variables between the exogenous factors and the outcome, delinquency. The purpose of the path analysis is to see what effects may be mediated by reading comprehension,
under the assumptions of causal order made here -- specifically that cultural and social
capital, along with all of the exogenous variables discussed earlier, affect reading
comprehension, which in turn affects delinquency. As can be seen by Path Diagram
One, there are many relationships to delinquency that are being mediated by reading
deficiency.

While it was shown in the earlier analysis that most of the exogenous variables in
the diagram have direct effects on delinquency, it is interesting to note how the total
effects add to the direct effects, once mediating influences are considered. Recall
Model Four in Table Three of the OLS regressions. The variables assessing race,
etnicity, IQ, and cultural capital variation were not statistically predictive of delinquency,
until interaction terms are considered. All of the other variables in model four of Table
Three are statistically significant “unconditional” effects. When the relationships are
understood as being mediated through reading deficiency, we see more general patterns
appearing. For example, we see that while cultural capital did not have an unconditional
direct effect on delinquency, it does have an indirect effect through the mediating
influence of reading ability. Cultural capital positively influences reading ability and
improved reading ability reduces delinquency.

We learn a lot about the relationship between race and delinquency when
considering mediating paths. For example, the effect of being Black on delinquency is
being mediated by reading comprehension. And the effect of being Black on
delinquency is being mediated by cultural capital, social capital and then reading
comprehension. The same holds true for being Hispanic, we learn more about the
relationship when considering mediating effects. For example, for Hispanics, cultural
capital and reading comprehension are also mediators in the relationship to delinquency.
Similarly, IQ is related to delinquency through cultural capital and reading
comprehension.
In the earlier regression models we saw that the variables having unconditional and direct effects on delinquency are reading deficiency, father not living in the home, digit span (sequencing ability), gender, mother’s level of education, social organization of the neighborhood, number of children in home and social capital. However, in the path analysis most all of the exogenous variables are being mediated through social, cultural or human capital. Each path will be described in more detail below. The indirect paths are interesting to note. However, the reader should be reminded that several interactions are also involved with many of these variables, so the “direct” effects vary by values of the moderating variables and when they do we can no longer speak in the terms of “direct effects” in the same sense as when the coefficients are presented for variables not involved in interactions. In the latter case, the coefficients represent the effect of an independent variable regardless of the values of the other variables in the equation, whereas with the presence of an interaction effect, the coefficients represent the effect of the independent variable at the mean of some other conditional variable. By considering unconditional, conditional and mediating effects one can get a better idea of the relationships between the variables that are significant predictors of delinquency.

Specifically related to this dissertation, the focus of the following discussion will be on the mediating effects of reading deficiency. Many of the exogenous variables effects on delinquency are in fact mediated though reading deficiency. Of all of the exogenous variables in the model, there are 7 paths to delinquency that are being mediated by reading deficiency. There are seven more that are being mediated first by cultural capital, and then by reading deficiency/literacy. While there are several exogenous variables’ effects on delinquency mediated by social capital, there is no direct relationship between social capital and reading comprehension. Therefore, discussion of the relationship between social capital and delinquency will be less developed in this dissertation, as it is not directly relevant to the question of the indirect
effects that reading comprehension mediates. However, a brief mention of the indirect paths related to social capital should be made. We can see that the number of children is negatively associated with social capital. As number of children increases, the bond and communication between the parent and child decreases. Social capital is then inversely associated with delinquency. As social capital increases (the bonds are stronger), delinquency decreases. However, this is a bit misleading because we cannot speak in terms of a general or unconditional direct effect of number of children in the home on social capital because it is actually involved in an interaction with whether or not the respondent is Hispanic. That is, if the respondent is Hispanic, lower number of children is associated with more social capital. This combination is then mediated through social capital to a decrease in delinquency. So, for Hispanic respondents there does appear to be beneficial effects of parental bond on delinquency; but that relationship is contingent upon there being fewer children in the home.

Another significant interaction found is between father living in the home and being Hispanic. As mentioned earlier, when the father lives in the home there is generally a positive effect on social capital. The child is likely to have a stronger bond to the parents and increased communication with the mother. However, for Hispanic respondents, when the father lives in the home the positive influence of father’s presence does not convert to more social capital for the child.

Basically, Hispanics are less likely to have social capital (even if the father is present in the home), and we see that social capital reduces delinquency. Therefore, ethnic differences in social bond are noted, when mediating and moderating effects are considered.

To provide more detail for the reader the discussion of the path findings will be grouped based on the influence of the exogenous variables as they are mediated by reading comprehension to delinquency. Note that the coefficients presented in the
diagram are standardized coefficients (Beta coefficients). In some instances these Betas represent the effect of the exogenous variable on the endogenous variable, and in some instances the Betas represent the effects of the exogenous on the endogenous at the means of moderating variables (or if the moderating variable is a dummy variable, the Betas represent the effect for the referent category, e.g., females for the gender variable where ‘1’ designates males). Moderated effects are asterisked in Path Diagram One.

**Hispanic:**

The effect of ethnicity (i.e., being Hispanic) on delinquency is mediated by cultural capital, which in turn is mediated by reading deficiency. However, the overall indirect effect is a very small magnitude, .001. Of course, in general the indirect effects are quite small throughout the analysis here as the direct effects are generally not very large to begin with. Since the indirect effects are multiplicative of the direct effects, the effects are all quite small by conventional standards throughout this path analysis. There is another path noted, but no mediating effects occur. The effect of being Hispanic on delinquency, at average IQ, is .056.

**Black:**

By looking at the path model we can see that there is no direct path to delinquency from race. That is, when controlling for the other variables in the model being Black does not have a direct effect on delinquency. However, there are some interesting mediating relationships to be noted. For Blacks, there is an inverse relationship to reading ability. If the child is Black then there is a greater likelihood that the reading scores will be lower (-.104)--see Path Diagram One. Since there is a direct negative relationship from reading comprehension to delinquency (-.068), it can be said that overall there is more delinquency among Blacks, and that reading ability is part of the explanation. Even though the magnitude is not large, .007, reading deficiency as a mediator between being Black and delinquency is statistically significant. Since
minorities are already disadvantaged in American society and since reading ability can be used as a legitimate barrier to prevent entry into opportunity, this mediating relationship to delinquency is an interesting finding.

There is another significant indirect path from race to delinquency that is being mediated, first by cultural capital, and then by reading deficiency. (Note, with this path there is a cross-product term involved. So we do not talk in terms of indirect effects that are un-moderated). The effect of being African American on cultural capital is being moderated by whether or not the father lives in the home. When the father is not in the home (zero), the effect of being Black on cultural capital is reduced by -.057 (see Path Diagram 5). Race influences the levels of cultural capital, which influences the level of reading ability and in turn reading ability is inversely associated with delinquency. From this analysis it appears that African Americans experience less cultural capital, and cultural capital influences reading ability. Reading deficiency is inversely associated with delinquency; therefore, part of the influence of race on crime can be understood through these processes. There are variations noted in race in regards to crime and delinquency. The effect of being Black on delinquency can be better understood when it is noted that Blacks are less likely to have cultural capital. Less cultural capital is likely to lead to more illiteracy, and illiteracy is likely to lead to more delinquency. Or stated differently, increased cultural capital exposure helps one to have higher literacy, and higher literacy helps to reduce delinquency. So, if cultural capital and reading ability are less for Blacks -- and we know these conditions influence delinquency -- then part of the race effect has been explained by these mediating and moderating influences.

One last indirect path that is involved with race and delinquency is also through cultural capital, and then through reading deficiency; but this time the interaction involved is between social organization and being Black (see Path Diagram 5). The effect of being African American on cultural capital is moderated by the level of social
organization noted in the community. The effect of being Black on cultural capital, when social organization is average is -.103. We can see from the coefficients in the path diagram that there is a positive relationship between social organization and cultural capital (.138). And we know that increased cultural capital leads to better literacy. Since we know that minority groups are more likely to live in socially disorganized neighborhoods, and to benefit less from social organization (note the negative interaction effect of -.052 for Black and social organization in Path Diagram Five-E), the effect of race on delinquency is explained by these processes. It is especially interesting to consider that there is no direct effect of race on crime, net of other variables in the model and when necessary controls variables are in place. When mediating effects are considered we have an even better understanding of why racial variations are noted in regards to delinquency. Two important things have emerged in regards to the effect of being Black on delinquent activity. First, studies that find that Blacks are more likely to engage in delinquency should have necessary statistical controls for the various forms of capital included here in the regression model. Recalling that being Black was having a significant effect on delinquency until “capital” was controlled. In this path analysis it can be seen that reading ability is an important contributor to delinquency and the effect of being Black on cultural capital is contingent upon whether or not the father is in the home and on the social organization of the community. Therefore, when trying to understand race effects it is important that mediating effects of human, cultural and social variables be considered. In general the cumulative disadvantage model appears to be validated in this analysis, as shown here by the fact that African Americans are less likely to have cultural capital, and benefit less from community organization and the father living in the home, than do whites.
IQ/ Gender:

The relationship between IQ and delinquency can also be understood by considering the mediating influence of reading deficiency. One of the significant paths goes directly from IQ to reading comprehension. There is an indirect effect of IQ on delinquency of -.016 with the path from IQ to reading ability and then to delinquency. As expected, there is a positive relationship between IQ and reading scores. The magnitude is not as high as some might expect .238, which suggests that other factors, such as social factors, are also important to consider when trying understanding the process of learning to read efficiently. Nevertheless, our understanding of the relationship between IQ and delinquency is improved when reading deficiency is considered as a mediating influence. Higher IQ generally improves reading ability; and reading ability is inversely related to delinquency. Higher IQ leads to better reading ability that result in a decrease in delinquency. Stated differently, when IQ's are lower, reading ability is likely to be lower and thus more delinquency is likely to be higher. So, it is arguable that we have an increased understanding of the effects of IQ on delinquency when we understand that it could be mediated by reading. By looking at the signs of the coefficients, we can see that the sign from reading to delinquency is negative; but the other signs in the path to reading comprehension are positive. Generally IQ is inversely related to delinquency (-.009) in its direct effect. Higher IQ decreases delinquency. IQ also is positively associated with reading comprehension. Thus, deficient reading ability mediates the positive effect of IQ on delinquency to further reduce delinquency.

The model becomes a bit more complex for the remaining significant indirect paths involved with IQ and reading ability because of multiplicative terms. There are several interactions involved with the relationship between IQ and cultural capital (specifically with being male, number of children, and social organization). Since these
cross-product terms have already been discussed earlier, there is little need to restate the plausible reasons for their relationships here. However, since relationships in the path are actually being moderated by other variables in the model before being mediated by reading deficiency, they should be mentioned briefly. For example, the cross-product term of IQ x gender on cultural capital is -.029. The effect of being male on cultural capital, when IQ is average, (which is zero because the variable has been centered) is – -.019. Since cultural capital is positively associated with reading ability (.142), we can determine that boys are a bit disadvantaged when it comes to reading ability because of their being less likely to be exposed to cultural capital. Gender differences have consistently been found in the criminological literature. We can see in the path diagram that there is a direct path to delinquency for males. Earlier in the analysis it was mentioned that it was surprising that gender differences were not found in these data in regards to reading ability. Other research has suggested that males were less likely to score as well on reading, compared to girls. It was initially expected that part of the relationship between males being more likely to be more involved in delinquency than are girls could be explained, in part, by the fact that males are more likely to struggle with reading and therefore the frustration they experience is more likely to result in delinquency. Since girls read better, it is expected that their delinquency would be less. It did not look like any support for this hypothesis was found. However, now that the effects of intervening variables and interaction terms are both included in the model, some support for the hypothesis is found. Stated simplistically, if boys are likely to fair less well with cultural capital and cultural capital is a significant, positive predictor of reading ability, then part of the over-representation of males in delinquency can be understood as a deficiency in cultural capital. Boys are deficient in cultural capital in part because IQ does not result in as much cultural capital is it does for girls. A deficiency in cultural capital is more likely to lead to deficient reading ability, and deficient reading
ability is more likely to lead to increased delinquency. By multiplying the coefficients in
the path we can see that the magnitude of the indirect effect is extremely small; the
effect however, makes sense theoretically. As is the case with race, a closer look at the
complexity of the IQ and gender relationships proves insightful.

The effect of IQ on cultural capital is also moderated by the level of social
organization. As just mentioned, we know from the sign of the coefficient between
cultural capital and literacy (.142) that increased cultural capital results in increased
reading ability. We also know from the sign of the coefficient between social
organization and cultural capital (.138) that increased social organization of the
community yields higher cultural capital.

The effect of IQ on cultural capital when the social organization of the community
is average is .143. Socially organized communities matched with higher IQ yields higher
cultural capital which, increases literacy. When reading ability is higher, delinquency is
reduced. Again, the Matthew effect is found: those rich in IQ and rich in the sense of
living in a well organized community have higher cultural capital. Socially disorganized
communities matched with below average IQ’s are more likely to result in lower cultural
capital; lower cultural capital results in lower reading ability, and when reading ability is
lower there is an increased chance of delinquency.

There is also another interaction effect involved with cultural capital. This time it
involves an interaction with number of the children in the home and IQ.

**Number of Children in the Home:**

The direct effect of number of children in the home on delinquency is positive
(.081), meaning that as number of children increases delinquency is likely to increase.
There are two indirect paths also noted. The indirect effects also suggest that an
increased number of children in the home hamper individual reading levels, but this
effect is moderated by one’s level of IQ. The effect of number of children in the home on
reading ability when the child’s IQ is average is -.058. So for children with average intelligence it is likely that increased children in the home results in more struggles with reading comprehension and in turn these struggles with reading ability can lead to increased delinquency (-.068). The indirect effect, when IQ moderates the relationship between number of kids in the home and reading ability and then reading ability influences delinquency is .004.

There is also another significant path that mediates the relationship between number of kids in the home and delinquency. This time the effect of number of kids is first to cultural capital before it is mediated through reading ability to delinquency. However, the effect of number of children on cultural capital is moderated by one’s level of IQ. In this case we see that the effect is positive. Overall, the effect of number of kids on cultural capital when IQ is average is .012, but increases by .065 with each IQ point above the mean. Here we see that the coefficient is positive suggesting that when the child has average IQ an increased number of kids in the home actually yields higher cultural capital exposure. Again, as discussed earlier, the finding can also be interpreted to mean that with more children in the home that have at least average intelligence, there are increased opportunities for there to be exposure to cultural capital as measured in this analysis. This finding is partially contrary to the expectations of the Matthew effect because usually having more children is considered a liability, but here it is not generally a liability because having more children for the above average IQ child results in more cultural capital in the home. However, in the situation where the IQ of the child is below average, cultural capital declines. For a more intuitive understanding of this, for example, consider that with increased number of children in the home there is a greater likelihood of there being musical instruments in the home. Since this is one of the questions used to create the cultural capital scale, then part of the relationship could be contingent in part on one of the specific measures of cultural capital used here.
However, it is still a worthy relationship to note—as already mentioned—increased capital is positively correlated with reading ability. So in this particular case increased number of children in the home actually has positive effects. Interestingly, while the magnitudes of the effects are small, human and cultural capital are important mediators between number of kids and delinquency.

**Mother’s Education:**

There is a direct effect of mother’s education on delinquency (-.072); as mother’s education increases, delinquency by the teen decreases. There are also indirect effects present. The effect of mother’s level of education on level of delinquency of the child is mediated by the reading level of the child. One path goes directly from mother’s education to reading deficiency and the standardized coefficient is .081; as mother’s education increases so does the reading comprehension of her child; there are no moderators present. Higher education for the mother has direct effects on delinquency but also the positive effects of increased education for the mother on the child’s delinquency are also mediated in that higher educated mothers have children who read better, which in turn is correlated with reduced delinquency. Here, the indirect path is -.006.

The other path is mediated by cultural capital before it goes to reading deficiency and then to delinquency and results in an indirect effect of -.002. The magnitude of the effect between mother’s education and cultural capital is fairly moderate (.160), indicating that when the mother’s education is higher, this in turn results in greater cultural capital for the child. When the effect between cultural capital and reading comprehension is recounted, we know that increased cultural capital leads to better reading (.142) and better reading ability results in reduced delinquency (-.068). In all, there are both direct and indirect benefits when mother’s education is higher. Since mother’s education influences both the cultural capital and the reading ability of the child,
these indirect paths are important to note. The data suggest that increased education by the mother serves as a buffer against her children’s delinquency involvement and that the possession of ‘capital’ is an important mediator in explaining the relationship. The path coefficients between mother’s education and both cultural and social capital are positive, indicating that as her education rises so do the various forms of capital discussed above. But when her education is low and capital is low there is a greater likelihood of delinquency by her child. This ties in closely with the theoretical position presented in this paper of cumulative disadvantage. If the child starts out disadvantaged it is difficult to catch up, and delinquency is more probable.

**Father Living in the Home:**

There is a direct effect of father living in the home and delinquency (-.093). When fathers are present, delinquency by the child decreases -- no moderators are found. There is also an indirect effect that occurs through cultural capital, then to human capital (reading comprehension) and then on to delinquency. Here moderators are found. While this relationship has already been discussed earlier, it will be briefly restated here. Generally, there is a positive relationship between father living in the home and cultural capital (.120), and generally there is a negative relationship between being Black and cultural capital (-.103). However, when interactions are considered, the effect of father in the home is actually moderated by the respondent’s race. For respondents who are Black, when the father is not in the home there is an inverse relationship to cultural capital (-.057). Overall, there does not appear to be beneficial effects of father living in the home on cultural capital when the respondent is Black. Reasons for this have been stated in detail above and again could reflect racial and cultural differences in what is likely to be considered cultural capital. However, since it has been established in this dissertation that cultural capital is positively correlated with literacy, it is important to consider racial differences in these regards. For all races when the father is not living in
the home, delinquency is more likely. Also those who are deficient in reading are more likely to be involved in delinquency. It is common in the literature to find that Black families are less likely to have fathers living in the home and this could be one consideration to explain racial differences in delinquency. However, when fathers are present for the Black children, the beneficial effects of cultural capital on reading ability are not experienced the same as they are with Whites. If the reason that Blacks do not fair as well with cultural capital is because there are racial differences in what is truly valued as “cultural capital” the fact remains that cultural capital, as it is measured in this analysis, is positively correlated with reading ability. As documented in the earlier discussion above, teachers value cultural capital and may be more likely to engage with students with similar or even greater cultural capital than they themselves have. Two problems are occurring regarding Black children. If Black children are not experiencing the same level of cultural capital that teachers value, the school experience may not be as rewarding. Also, if it is a fact that increased cultural capital increases reading comprehension -- and Black children are likely to receive less cultural capital exposure -- then part of the reason that Black children do not read as well as White children can be explained through the relationship to cultural capital. Note, that in this analysis there is an inverse relationship with being Black and reading comprehension (-.104). Blacks are likely to read less well. This finding is especially important in face of such research as that of Herrnstein and Murray who suggest that IQ is an important determinant of crime and Blacks are more likely to have lower IQ’s. The analysis above supports the interpretation that mediating relationships of “capital” are very important to consider in the process of reading development. This strikes at the very core of inequality research. A great source to review for similar findings is George Farkas (1990), who has addressed variation in reading ability for minority groups based on cultural variation.
Social Organization:

Issues of social organization have been discussed already, as it is a moderator in the effect of race on cultural capital. However, it was not mentioned that social organization is also directly correlated to delinquency. The standardized coefficient is fairly moderate -.216 and supports other research that finds that when communities are socially disorganized, crime is more likely. The negative coefficient suggests that as the social organization of the community increase delinquency decreases. The data also suggest that for Blacks the acquisition of cultural capital is more of a problem when social organization is less. For example, for Blacks when social organization is average the effect of race is -.052. The effect of being Black on cultural capital, however, is affected by the level of social organization in the community. Again, the cumulative disadvantage model is supported somewhat, because we know minorities are more likely to be disadvantaged to begin with and when they live in socially disorganized communities their cultural capital is likely to be even less. It can be seen from the sign of the coefficient between cultural capital and reading ability that decreased cultural capital leads to deficiencies in reading ability and reading deficiency is correlated with increases in delinquency. Thus another important path between race and delinquency has been identified and support for the Matthew effect has been found.

Digit Span (Sequencing Ability)

The effect of the cognitive measure “digit span” which represents the child’s sequencing ability, on level of delinquency is mediated by the reading level of the child. As noted in earlier discussion, there is a positive direct effect between digit span and delinquency as can be seen by the coefficient (.107). Increased “sequencing ability” actually increases delinquency. Part of this may be explained by the fact that digit span is a common measure to identify students in need of special attention and perhaps those students receiving special attention are less likely to have the opportunity for delinquent
behavior. However, there are indirect effects which are also involved with sequencing ability that warrant discussion. There is a path that goes directly from digit span to reading comprehension (.189). From the direction of the coefficient, we can see that higher digit span is also correlated with better reading ability. (As can be recalled from the discussion on social capital, digit span is also positively associated with increased social capital). The indirect effect, when digit span is mediated through reading ability and then to delinquency is -.013 (.189 x -.068).

It can be recalled that the direct effect of digit span is a positive coefficient (.107). What is interesting to note is that the directions of the effects actually differ between the direct effect and when reading deficiency is considered as a mediator. The direct relationship between digit span and delinquency has been positive in every model up to this point. However, when reading deficiency is considered as a mediator we see the indirect effect of digit span actually is negative. It was a bit unexpected that digit span would be positively correlated with delinquency, but this possibly was explained by the fact that the measure is often used as a tool to identify students in need of extra attention by teacher, parents and school officials. But as can be seen in this path model the relationships are a bit more complex. For example, higher sequencing ability leads to greater social capital and greater reading ability, not less. For example, those with lower sequencing ability have less social capital, and less social capital leads to more delinquency. Those with lower sequencing ability fair less well in regards to reading ability. And greater literacy leads to less delinquency. Thus, there are “countervailing” effects of sequencing ability. It has a direct effect of increasing delinquency, but it also leads to higher social capital that reduces delinquency, as well as to better reading comprehension that also reduces delinquency. In essence, if a research report suggested that higher sequencing ability led to more delinquency and these interactions and mediating effects were not considered, the picture would be incomplete. While
higher sequencing ability is found to be correlated with delinquency, those with low ability are probably receiving extra attention that can serve to deter delinquent involvement. However, since we know that reading ability is inversely correlated to delinquency, the effect of sequencing ability on literacy is an important consideration. It is important to consider that those with low sequencing ability are likely to read less well and are also likely to have lower social capital. Both poor reading and low social capital are associated with delinquency. This statistical finding is extremely interesting in the fact that some research suggests that sequencing ability (digit span) is often used as a gage of dyslexia. If we know that reading comprehension is negatively correlated to delinquency and we know that a very large percentage of the prison population are dyslexic (Brunner, 1993) this statistical path is a very noteworthy finding. What we do not know in these data is what percentage of these folks are receiving extra attention. Furthermore, it is not known which individual with dyslexia receive the necessary interventions to remediate the dyslexia such that delinquency is avoided. However, for those dyslexics who do not receive the necessary support (and at the right time), it is possible that their disability can convert to delinquency and perhaps even criminal behavior that is likely to result in incarceration. We cannot tell here with the available data how much these processes are relevant. What we can tell from this path analysis is that sequencing ability is positively correlated with social capital -- which means that those deficient in sequencing ability (i.e., dyslexia) are likely to fair less well in regards to the bond and communication with the parents; perhaps some children with dyslexia are likely to have very strong relationships; but perhaps their struggles are likely to build friction in the relationships between parent and child/and teacher and child which is more likely to lead to delinquency. Note, however, that the relationship is rather small ($B=.027$). However, since the measure of digit span is taken when the child is only 7-9 years old in this study, perhaps the true source of their academic struggles have not
been identified yet. Perhaps some do not get the proper intervention before the avenue to more delinquency has begun. This ties in closely with the theoretical position of this dissertation that there are trajectories that push and pull one into delinquency. While this dissertation has not provided a lot of discussion specifically regarding dyslexia, primarily because no direct measures of dyslexia were available, this indirect path between sequencing ability to reading comprehension to delinquency -.013 (i.e., .189 x -.068), as well as the path between sequencing ability to social capital to delinquency -.002 (.027 x -.092) are important considerations.

Since the discussion of social capital has been brought up, it should also be noted that there is a moderator involved in the relationship between digit span and social capital. Generally, there is a positive “main effect” of sequencing ability (digit span) on and social capital (.027). The “main effect” of being Black on social capital is negative (-.017). The cross-product term for Black x digit span is -.095. So, we can speak of the effect of Being black on social capital is even more negative when digit span increases above the average or social capital is less necessary when the Black respondent has high sequencing ability.

Summary:

Since so many interesting relationships to delinquency have been identified as they mediate through reading ability, it would be overwhelming to restate them all here. However, as it most appropriately relates to the core of the research project, at least some should be reemphasized. If we compare the “direct” effect of IQ and reading deficiency, the effect of the reading comprehension on delinquency is of a larger magnitude than is the effect of IQ on delinquency. (Of course, reading ability is measured more closely in time in this study to delinquency than is IQ, so that may partly account for the weaker direct effect of IQ on delinquency). It is also interesting to note that the capital measures are important mediators between IQ and delinquency. Both
cultural capital and reading ability are influenced by levels of IQ and both cultural capital and literacy serves to reduce delinquency. The race effects mediated through the paths have provided insight. They have allowed for the effects of capital to be assessed as they mediate relationships between race and delinquency. Since sequencing ability is predictive of reading comprehension, this analysis has touched upon the importance of identifying reading inabilities such as dyslexia early so that weakened relationships (social bond) and reading failure can be avoided. Since we know that both forms of capital decrease the propensity toward delinquency, early intervention is crucial. A dyslexic person who has strong family bonds could very likely overcome the difficulties associated with their struggles. However, when reading disabilities (such as dyslexia) are matched with weak family bonds and poor reading ability the chance for delinquency to occur is only increased. Again this may have as much to do with the frustration that a struggling reader faces, as it does to the opportunities that are blocked because of the reading deficiencies.

In this analysis it has been tedious to keep track of the direct, indirect and moderating effects all within one model; however the path analysis has allowed for a useful visual summary of the findings. One initial concern with reporting the various relationships is that the coefficients are generally small by conventional standards. But because the indirect effects are multiplicative of the direct effects (which are often small to begin with), the indirect effects are smaller still by conventional standards throughout the path analysis. However, in path analysis, even a small coefficient arguably can lead to insight if it makes good theoretical sense. Most of the relationships found here are consistent with theoretical orientations presented in this paper and hopefully have added somewhat to our understanding of the occurrence of delinquency.
CHAPTER FIVE: CONCLUSIONS

Overview:

Several research questions have been quantitatively assessed in this dissertation and a plethora of statistical relationships have been found. The first series of regressions were to determine if in fact there is support for the first hypothesis that reading acquisition is a significant predictor of delinquency and to evaluate if it has an influence independent of IQ in regression models. Attention has been given in the literature to the significance of IQ, but very little attention has been given to the role of reading deficiency. The empirical results allow for the rejection of the null hypothesis that, net of the effects of several other variables in the model, reading comprehension has no effect on delinquency. Two important pieces of information have emerged in relation to this query. Reading comprehension actually does contribute to explaining variance in delinquency, net of all of the controls in the model, although the effect is modest (Beta of -.068) and conditional on family size. So, even when race, ethnicity, gender, mother’s education, number of kids in the home, father not living in the home, cultural capital, social capital, social organization of the community, IQ and sequencing ability (digit span) are in the model, reading comprehension is still a significant predictor of delinquency. As reading comprehension increases, delinquency is reduced, but this relationship is contingent upon how many children are living in the home. Stated another way, when there is an average number of kids in the home, literacy serves to reduce delinquency. However, the beneficial effects of literacy are undermined as the number of children in the home increases. Perhaps this relates to a lack of adequate attention on the part of the parents such that reading skill benefits dissipate, when the number of children is high and monitoring is relatively low. Alternatively, it relates to socio-economic status and strain in that additional children lead to diminished resources,


which in turn limit the impact of reading comprehension. The beneficial effects of reading comprehension on delinquency are reduced when the numbers of children in the home increase and can actually be counter productive when the number of siblings grows too large (although there are few observations in the data on which to base this last claim).

As for the second general hypothesis that various forms of capital, especially human, social and cultural capital, will impact delinquency ample support is found for the effects of all of these types of capital on delinquency. For human capital, all three measures (IQ, reading comprehension, and sequencing ability) are predictive of delinquency, net of the effects of the other variables in the model. As for social capital, a measure of the degree of association/bond with the mother is a modest predictor of delinquency, as is the presence of the father in the home (moderated by IQ), and mother’s education. As for cultural capital, it too is found to be predictive of delinquency (again the effect net of other variables in the model is modest, Beta=-.068). Thus, in general, support is found for the effects of various forms of capital on delinquency, a finding generally consistent with previous research.

As for the third general hypothesis, that there will be statistically significant interaction effects and that such interaction effects will follow a general pattern associated with the “Mathew effect” (“the rich get richer while the poor get poorer”), the findings are not consistent in the sense that many hypothesized effects are not found. However, some support for the Matthew effect is found. That is, findings of interactions support the third hypothesis presented in Chapter Two in that cross-product terms not only have an effect, but so in accordance with the Matthew hypothesis, the “rich will get richer” and “the poor will get poorer”. More specifically, variables associated with privilege or beneficial characteristics interact with other similar variables, resulting in less delinquency than if only unmoderated, linear additive effects were found. In general
there is some evidence of such Matthew effects; however, at the same time, many hypothesized effects are not found to be statistically significant, and are thus inconsistent with the hypothesized Matthew effect. For example, of the 65 interaction effects tested in Model 5 of Table 3, only three are found to be statistically significant. Two of the three interaction effects found to be statistically significant in the prediction of delinquency are in harmony with the hypothesized Matthew effect: reading comprehension by number of kids and IQ by Hispanic. Specifically, reading comprehension’s beneficial effect of reducing delinquency declines and disappears as family size grows. Also, for Hispanics, IQ has no effect on delinquency, whereas IQ does reduce delinquency for Whites (possibly a form of a “white privilege” effect). All of these hypotheses are in general harmony with “less benefit” of human capital (reading comprehension or IQ) for the relatively disadvantaged (those in large families or Hispanics). One reverse effect is the moderated effect of IQ which negates the beneficial effect of father in the home on delinquency. Of all of the interaction effects discussed below for endogenous variables other than delinquency, this is one of three that runs counter to the hypothesized Matthew effect. Here, those “rich” in having a father present and high IQ do not reap the benefits of less delinquency, but rather effects are only “compensatory” – either one of the variables (high IQ or having a father present, results in less delinquency). Thus, although the interaction between father present and child’s IQ is not a Matthew effect, it does suggest that there are multiple avenues to less delinquency – high IQ or father present – for those who have these characteristics.

At the same time it is mentioned that three statistically significant interaction effects are found, it must be mentioned that there were 62 other possible interaction effects for which we could not reject the null hypothesis (65 were tested for regarding possible effects on delinquency). There are many possible reasons for the relative lack of interaction effects. There may have been too much measurement error, too much
multicollinearity, or the “rules” of “forward selection” in which the variable with the larger of two partial correlations enters the equation first effectively reduced the number of product terms that could enter into the equation. That is, some other interaction term, with considerable shared variance entered before a given variable. Each reason will be discussed in some detail.

In general, the higher the measurement error of a variable, the less likely it will achieve statistical significance in an hypothesized correlation/regression analysis. Measurement error attenuates correlations and the regression coefficients (Cohen and Cohen, 1983). When interaction terms are computed as product terms, the measurement error is compounded – it has greater measurement error than either of the two variables that it was composed from (Cohen, and Cohen, 1983). Given the generally small bivariate correlations (as reported earlier), it is not entirely surprising to find that many hypothesized interactions were not found to be statistically significant. (Indeed, the difficulty in “finding” statistically significant interaction terms is presumably one of the reasons why researchers do not always spend time and energy testing for them.) Nevertheless, it should be noted that despite the more extensive measurement error with the use of interaction terms, three were found to be statistically significant (as discussed above).

Multicollinearity is a second plausible reason why more statistically significant interaction terms were not found in the analysis. Often times a product term will be collinear with the “main effect” variables of which it is composed. Where that correlation is excessive, one cannot reliably test for an interaction effect. Here, if any variable or product term had tolerance values below .250 or Variance Inflation Factor scores of 4.0 or higher, it was dropped from the analysis.

Another reason why more statistically significant product terms were not found is that the product term simply did not have a large enough partial correlation with the
dependent variable. Perhaps it was statistically insignificant after other product terms were entered—product terms with which it shared explanatory variance. That is, the statistical insignificance could possibly be due to correlation with other variables already in the model—either “main effects” or interaction effects. Under the rules of forward selection followed here, “to the victor goes the spoils” in the sense that once an interaction term enters, highly correlated (yet not technically collinear) interaction terms are unlikely to explain much further variance in the dependent variable. For example, when the interaction term for father in the home and IQ entered the equation, it was somewhat more difficult for other product terms sharing explanatory variance with the first product term to then enter into the equation (that is, it is much more difficult for additional interaction terms to reach statistical significance as a predictor of the dependent variable).

The lack of interaction effects is particularly noteworthy. Among those variables not found to be significant include the interactions among the various forms of human capital. Also, no interactions are found between social and cultural capital, as well as between each of these forms of capital and other variables in the model such as race, gender, father present and mother’s education. Thus, disappointingly few interaction effects are found among the many tested, leaving open the possibility that one or more of the three interactions are Type I errors (i.e., a false claim is made to reject the null hypothesis).

To further examine the potential concern for the correlation among “main effect” human capital measures, separate regression models are conducted with each of the cognitive variables (IQ, digit span, and reading comprehension). If IQ and reading comprehension are in fact two variables measuring the same process, then it would be expected that they act accordingly in the data. However, as shown in the analysis above, each interacts with other variables in unique ways and each contributes to the
explanation of delinquency independently. So it is argued, based on the research presented herein, that IQ, sequencing ability, and reading comprehension are important variables to include in models of delinquency.

There were additional interaction effects found in the analysis among the various predictor variables with the endogenous variables of reading comprehension, social capital, and cultural capital. Matthew effects were again tested for, and some support is again found for their presence. Again, however, there is a relative paucity of statistically significant product terms, compared to all of those tested. Nevertheless, the interaction effects that were found are important and largely in accordance with the hypothesized Matthew effects (“the rich get richer and the poor get poorer”). Starting with reading comprehension, it was found that IQ interacts with number of children and with cultural capital to affect reading comprehension. The direction of the effects is consistent with the hypothesized Matthew effect: more children in the family reduces the benefit of IQ of the child, and cultural capital enhances the effect of IQ (or stated another way, IQ enhances the effect of cultural capital on reading comprehension). In both of these interactions “the rich get richer”. Two of the 20 interaction effects “tested” for on reading comprehension were statistically significant (however, not all of the 20 interactions were truly tested because some of them may have been too highly collinear to be tested in the equations).

As for social capital, 14 interaction terms were tested and four were found to be statistically significant. Race and ethnicity all interact in ways supportive of the Matthew hypothesis. Specifically, in Hispanic homes the variable “number of children” has a more adverse effect on social capital, and being Hispanic negates the beneficial effect of father in the home on social capital. For Blacks, sequencing ability results in less social capital, whereas for Whites, the effect of sequencing ability on social capital is positive. Again, the “poor” (minorities) do not receive the benefits of a present father or
sequencing ability, and are adversely affected by large family size. Thus, all four of the statistically significant interaction terms support the Matthew hypothesis.

As for the effects of interaction terms on cultural capital the effects are in general harmony with the Matthew effect. Here 27 product terms were “tested” (again some may have had excessive collinearity and thus were not truly tested) and five were found to be statistically significant. Those in relatively disadvantaged positions due to family size or race are less likely to receive the benefits of higher cultural capital attributable to higher social organization, or father living in the home (recall the path diagrams above). Two exceptions to the general support for the Matthew effect include the moderating impact of being male on reducing the effect IQ on cultural capital (representing the second time a “reverse” or non-Matthew effect is found in the present analysis – the first being the moderated effect that IQ had in negating the beneficial effect of father in the home on delinquency – discussed above). That is, cultural capital is less likely to be generated in the home of the male child than the intelligent female child (although the reduction in the beneficial effect on cultural capital is rather small). A post hoc argument in line with the Matthew effect will be discussed momentarily.

In a second “contrary to a Matthew” effect, IQ is found to enhance the effect of number of children on cultural capital. This is contrary to the Matthew effect because small families are usually conceptualized as privileged, whereas here it is the large families that generate more cultural capital, and this effect is magnified when the child has a higher IQ. Further elaboration will be provided below on plausible explanations for this effect being found.

In total, there were 13 statistically significant interaction effects found from among the 126 possible interactions that could have been found (65 for delinquency, 20 for reading comprehension, 14 for social capital, and 27 for cultural capital). At least ten of them were consistent with the hypothesized “Matthew effect”. While we do not know
how many actual product terms were tested in the usual sense of the term because of the use of the forward entry criteria (thus, for example many product terms were not technically “tested” due to high collinearity), the number of statistically significant ones that would be “expected” given a .05 alpha level, if all were tested, would be between 6 or 7 (that is, if in fact all 126 product terms were truly tested we would expect 5% of them to be significant “by chance”). The fact that we find 14 statistically significant ones suggests that we are not entirely capitalizing on chance and that the interaction effects in general may be indicative of actual moderated social processes.

Of the 13 interaction effects found, 10 of them are in the direction of the hypothesized Matthew effect. It should be mentioned, however, that one of the reverse effects: interactions of IQ x male on cultural capital might be interpreted, post hoc, as support for the Matthew effect in that women are the advantaged group relative to males for crime commission, since it is well known that females are far less likely to be involved in conventionally defined crime. The interaction effect that is found here indicates that females benefit more from IQ increases than males as far as resulting increases in cultural capital. So in a sense those already “rich” in cultural capital and in the low propensity to commit crime benefit more from another “rich” -- IQ, to increase cultural capital. Also, it might also be mentioned that another seemingly “reverse Matthew” interaction effect of number of children in the family and IQ of the child – in relation to increased in cultural capital – may in part be a somewhat artificial consequence of the greater chance of available musical instruments in the home of the multi-child family. Simply stated, the more children the greater the likely that there will be musical instruments in the household, along with other types of cultural capital. Thus, it may be that it is somewhat of an “artificial” positive correlation between family size and cultural capital, and that may partially account for the positive cross-product terms of IQ by number of children in the family. We do not know in these data what the actual socio-
economic standing of the family is, and this could be an important consideration. Perhaps some consideration needs to be given that those rich in resources are likely to have children with higher IQs. When this is the case, perhaps these parents are likely to have more children -- with more, higher IQ children in the home -- more opportunity exists for there to be exposure to cultural capital for all siblings.

In general the finding of the existence of Matthew effects raises questions as to why the Matthew effects are being found rather than the reverse. Why is it that social, cultural and a form of human capital (reading comprehension), as well as a lack of delinquency accrue to those in more advantaged positions? Different specific mechanisms may be involved in each Matthew effect, so an attempt will be made to discuss the possible mechanisms in greater detail.

1. The beneficial effect reading comprehension has on delinquency is negated by large family size. Possible mechanisms include relative lack of supervision in large families (lack of individualized time for each child), allowing the child with better reading ability more unsupervised time in which to get involved in delinquency. It may be that in the small family reading comprehension more easily translates into good grades and a “stake in conformity” or what Hirschi called “commitment” to conventional institutions such as education and bond to the family.

2. The beneficial effect of IQ in reducing delinquency is negated in the Hispanic family and in the family with the father present (which at first glance seems odd). Possible mechanisms include the possibility that IQ is less likely to result in better grades or educational commitment in Hispanic households -- perhaps because of perceptions that intelligence is not likely to translate into future economic success, perhaps because of processes of discrimination against Hispanics or negative labeling of Hispanics in the
school system. As for the father present reducing the beneficial effect of IQ, it may be that the effects are “compensatory” in that either one or the other can reduce delinquency, but not both. Stated more abstractly, either the degree of social control in the form of attachment to father that can reduce delinquency or commitment can reduce delinquency, but both cannot reduce delinquency as much in the “presence” of the other characteristic as without the other characteristic. That is, there is some redundancy in the causal mechanisms of attachment and commitment. Stated another way there may be a “floor” effect in the reduction of delinquency: either attachment or commitment can reduce the delinquency below a certain level. Since zero is the least delinquency one can have, there may be a “floor” effect operating.

3. **Reading comprehension** of the child is a valued objective. The effect of IQ on reading comprehension is enhanced by cultural capital, presumably because of added exposure to symbols, reading materials, and so forth as those factors interact with the higher IQ child. More difficult to explain is the negative effect IQ has in making worse the effect of number of siblings (number of children in the home) on reading comprehension. Here the “poor get poorer” in that reading comprehension in the child with many siblings is reduced more by the combination of siblings and high IQ, than the other way around. The mechanism here might be a “failure in socialization” effect: the relatively high IQ child with many siblings does not learn to value reading in the large family, where perhaps there is less quiet time for reading, or more distractions from reading. (It should be noted however that there is, nevertheless, a positive impact of IQ on reading comprehension, even in the large family – just not as much as in the smaller family.)
4. **Social capital** (recall it is defined as communication and bond between the child and mother) is lower among black and Hispanics, but lowered still by the combination with large families. Perhaps the mechanism here is that attachment is excessively shared or distributed in large families across family members. A similar process may be involved with the effect that father in the home has in the Hispanic family – reducing somewhat social capital – again perhaps the degree of attachment is “spread too thin” across siblings and both parents. Although attachment is not usually thought of as a “zero sum game” perhaps there is something to that idea.

5. **Cultural Capital** is less prevalent in the African American home than the White home, according to the results of the analysis. Although father in the home and social organization of the community has beneficial impacts on cultural capital in the Black home, the impact is not as strong as in the White home. One possible mechanism is the racial discrimination experienced by African Americans limits the accumulation of cultural capital. Another is somewhat of an measurement artifact: African Americans simply value different cultural capital than Whites, and these cultural objects used in the measurement scale in this dissertation align more closely with what is being valued by Whites. Also regarding cultural capital, one can see a “rich get richer” effect in the positive interaction between IQ and social organization on cultural capital. One possible explanation here is that social organization proxies for the social class of the family (as a direct measure of social class is missing) and where all of the advantages of social class are present, IQ results in more cultural capital in the home (e.g., the middle class bright child is more likely to get piano lessons.). While number of children in the home has been conceptualized as a general liability, as has the variable being
female, this way of thinking may be mistaken as the positive interactions between number of siblings and IQ -- as well as gender and IQ -- suggest in their effects of increasing cultural capital. Females may be the “privileged” gender regarding cultural capital (and regarding delinquency). The home with many, presumably bright siblings may lead to more cultural capital. If having many siblings is a “rich” then here also those “rich” in IQ get even richer from the presence of siblings (bear in mind that if IQ is mostly genetic, the bright child is more likely to have bright siblings).

This recounting of the statistically significant interaction effects, along with the discussion of possible causal mechanisms leading to the various forms of capital and lack of delinquency suggests support for the contention of Abbott regarding “general linear reality” (Abbott, 1988). Researchers too often assume linear additive effects among their variables, when in fact the effects are not additive (or not linear). Stated another way, why shouldn’t we expect there to be non-additive effects (interactive effects) among the variables?

Another way to think about the interaction effects is to consider that seven of the 14 found pertain to IQ. One type of IQ interaction seems to be about environment-IQ interactions. That is, IQ in combination with environments with high cultural capital, or in combination with social organization, or for children with few or no siblings results in a better “payoff” in the form of enhanced reading comprehension, cultural capital, and again reading comprehension, respectively. Where “positive forces” of nature and nurture interact, there are benefits to be gained. At the same time the interaction of IQ with a child having many siblings has a positive impact on cultural capital, so it may be that cultural capital is a side benefit of having many siblings, although that possibility was not anticipated at the beginning of the study. If so, this interaction is another example of a nature and nurture interacting to the benefit of the child. The gender-IQ interaction
effect on cultural capital also was not anticipated, but it seems that if cultural capital itself is more associated with the female child than the male, then it should not be too surprising to find that the more intelligent female child helps bring about more cultural capital in the home, in part as a result of her greater interests in cultural events and objects than a bright male child.

Two IQ interactions that are the most intriguing or perhaps the most difficult to explain seem to be the ones that suggest that high IQ can lead to more delinquency rather an less. For example, when there is more authority in the home as when the father is present in the home, this can lead to more delinquency. There is some research to corroborate this possible interpretation, not the least of which is Durkheim’s famous example of altruistic suicide – “too much” bond of the individual to a collectivity can be harmful (lead to suicide) just as “too little” bond can lead to harm in the form of egoistic suicide. Thus, there may be something like that going on here in the home where the father is present with the high IQ child. That is, there may be too much authority. The relatively smart adolescent/teenager rebels against the relatively high degree of authority in the two parent household. Admittedly, this is speculative. As for the IQ-Hispanic interaction on delinquency, perhaps a similar Durkheimian explanation is possible in that the traditional Hispanic family (most often Catholic) represents a relatively “repressive” setting for the bright Hispanic child who then rebels.

Also, four of the 14 interactions involve family size. Early on it was hypothesized that large families were generally detrimental to the accumulation of capital, and indeed, having relatively many siblings reduces social capital (bond and interaction with the mother), especially in the homes of the Hispanic family, and leads to lower reading comprehension scores. What was not anticipated is that the child with improved reading scores in the home with many siblings is more likely to engage in delinquency. Again, one is reminded of the imagery of the negative consequences of the Durkheimian
concept of “too much” supervision: the child rich in human capital (reading ability) rebels against the many bonds with siblings presumably present in the larger families. Thus, perhaps more credence should be given to the Durkheimian warnings of negative consequences of “too much” bonding. What was initially a surprise on first finding is the positive interaction between number of siblings and IQ in their joint effects on cultural capital. However, it may just be that cultural capital accrues more readily in the household where there are many bright children.

Finally, the existence of Matthew effects among the interaction effects provides insights into the concepts of “cumulative disadvantage” and life-course turning points. Perhaps nature and nurture do work together in a non-additive way so as to garner benefits to those with advantage in more than one sphere or one characteristic. Although the data that are analyzed here are not panel data, and the data on early measures of reading and other forms of capital over the early life course of the child are not available here, the data do allow for drawing some possible conclusions regarding how early life course processes might work. Reading comprehension, as well as cultural and social capital, accrues disproportionately to those with some advantage. IQ and family size are two of the most important moderators in these processes, but social organization of the neighborhood is also important, as is race and ethnicity.

It should not be forgotten that there were numerous “main effects” of variables in the analysis – not just interaction effects. The commission of delinquent acts has been shown here to be a product of reading comprehension, as well as cultural capital, as well as other exogenous variables such as race/ethnicity, IQ, gender, mother’s education, family size, father present in the home, social organization of the community and sequencing ability. Although much of the emphasis in the study has been on the third general hypothesis regarding Matthew effects, the dissertation also has found many
main effects of the variables just mentioned that provide insight into how delinquency comes about.

Another finding of the dissertation, that of a cognitive skill, reading comprehension, serves to tap many of the same issues as does IQ, but with as much or perhaps more potential for policy and social intervention. For example, deficiency in reading ability can cause poor school performance, which can weaken bonds. This is one of the main arguments in most of the theories that include IQ as a variable in models of delinquency (basic social bond theory). While it is acknowledged that IQ can be the cause of poor school performance, so could the inability to learn to read effectively. It could also be that those with exceptionally low IQ’s do not experience the types of frustration, anger and rejection that lead to more serious delinquency – although this was not tested or demonstrated in the current research. It is suspected that in a society whereby the school experience is based on an ability to read and comprehend material, those with an inability to do so may be more likely to experience frustration and rejection. This cycle can likely contribute to problem behavior at school and even lead to more serious forms of delinquency. When the relatively illiterate and struggling reader is denied opportunity to advanced education and better jobs, then the path to delinquency and crime is reinforced. Basically, what is being suggested here is that a cognitive process as important as IQ (or even more important than IQ) is reading comprehension. If reading comprehension is identified as an equally important theoretical factor, as is IQ, to the prediction of delinquency, then perhaps a less controversial variable has been identified and the potential for intervention that is arguably somewhat improved (in that reading disabilities can be addressed by reading programs). By analyzing the contribution of both variables (IQ and reading comprehension), one is about as equally predictive as the other. Yet there is arguably more potential for policy intervention with literacy than there is with IQ.
The variables used in the regression model of delinquency were not chosen based on their ability to also predict variation in reading ability; however, it was expected that some of the same variables that influence delinquency would influence reading ability, because both are tied to issues of inequality. The literature review section of this dissertation took great detail in demonstrating much of the commonality. When reading ability was regressed on the same independent variables that were used in the delinquency model, the independent variables actually predict almost 30 percent of the variance in reading variation. While two cognitive measures are included (IQ and sequencing ability), variance is also being explained from the more socially orientated variables in the model. This is suggestive that a change in social conditions can influence literacy levels. America is a stratified society, yet the sorting mechanisms are not always obvious. When it is understood what contributes to reading deficiency and what those deficiencies can cause for later in life, the embedded issues of inequality in the explanation of delinquency and criminal behavior are more exposed.

By including measures of capital and measures of cognitive ability in the same model, the connection between the field of inequality and criminology emerge. As will be discussed in greater detail later, even the potential to better explain the relationship between race and crime and gender and crime has emerged in this analysis. For example, George Farkas has written that cultural variation contributes to variation in literacy (1990). For his model, he even goes as far as to suggest that linguistic variation is responsible for some reading deficiency among racial and ethnic groups. If individuals speak “differently” than the way that words are spelled, then reading struggles can be expected. This dissertation takes this to the next level and suggests that this path can continue onward towards criminal behavior and can be used to explain the over-representation of Blacks in prison. Frustration can result as a direct result of illiteracy, as well as opportunities are blocked to those who can not read; thus, illiteracy can be
considered as a “turning point” to the path of delinquency/crime and further reduced opportunities. In this dissertation the harmful effects of labeling have not been fully developed. The reader is reminded that the negative effects of labeling is a process that occurs over time and contributes to a better understanding of the cumulative disadvantage model that explains variation in offending. It is also being suggested, based on the Matthew effect that Blacks are already disadvantaged in American society and that disadvantage is reinforced when other forms of capital are deficient. When an individual is Black and can not read well, and therefore has not done well in school, then the opportunities that are closed appear justified. In this regard closed opportunities do not appear to be related to racism or discrimination. The channeling appears legitimate. Even more unfortunate is the probability of incarceration. Again, based on the Matthew effect, the disadvantaged become further disadvantaged.

As mentioned above, the data confirm that Blacks are not as likely to do as well as are Whites in regards to reading comprehension. And even though linguistic variation is not assessed in this study, there is cultural capital variation noted in regards to race. Blacks are less likely than Whites to have exposure to cultural capital. And this research confirms that cultural capital is a predictor of reading comprehension. This mechanism also holds true in regards to gender variation as well. Boys are less likely to have exposure to cultural capital and deficiency in cultural capital is correlated with deficiency in reading comprehension. Therefore, two of the known correlates of crime and delinquency are better explained by understanding the role of literacy and what variables influence reading comprehension variation.

The theoretical orientation presented in this dissertation follows that of a cumulative disadvantage model. As mentioned, Sampson and Laub (1997) describe the process of cumulative disadvantage in the book Developmental Theories of Crime and Delinquency and remind us that certain events can kick into motion dynamic processes
that alter future outcomes. One “disadvantage”, for example, can often lead to another and a snowball effect is likely to result. The interaction effects discussed earlier point to some of the more important processes that lead to cumulative disadvantage.

This study has specifically analyzed variation in capital as it contributes to delinquency – and as capital contributes to reading ability. Some children and young adults are more disadvantaged than others in regards to forms of capital. Each form of capital is found to be inversely correlated with delinquency, lending support for hypothesis two. Support is also given for the last hypothesis mentioned in Chapter Two which predicts that reading comprehension will mediate the relationship between many of the common predictors of crime and delinquency.

The series of interactions that have been found, along with the significant findings of the importance of considering forms of capital as mediating influence lends credibility to the theoretical orientation presented. One disadvantage is likely to be compounded by another. An array of criminological theories can be used to make sense of the statistical relationships found in this analysis. Social structure theories are involved with the social organization effects; social bond is involved with the social capital effects, and so forth. However, it is argued in this study that the multitude of dynamic and diverse processes is better suited by looking at these statistical relationships as processes of cumulative disadvantage. One disadvantage contributes to another ultimately leading to a path of crime and delinquency. For example, the path analysis reveals that in many cases the variables that normally predict delinquency are compounded when there is disadvantaged position of human, cultural or social capital, especially for Blacks, Hispanics and males. As mentioned when the necessary controls are included the direct effect of race and ethnicity on delinquency is not significant. However, when interaction terms are included and the mediating effects of human
capital (literacy) are included race and ethnicity comes back into the model. The dissertation has contributed to the literature specifically in this regard.

When the child has a low IQ, comes from a fatherless home, has a mother that is poorly educated, is from a home with an increased number of siblings, or when he/she resides in socially disorganized neighborhoods the effect of these conditions on delinquency are made more clear by considering literacy as a mediating factor in the relationship. Statistically significant effects have been found for all of these effects in the path analysis. However, while the interpretation seems to be suggestive of some important revelation, it should be buffered by reminding the reader that while statistical effects are found, few of the magnitudes of the effects in the path analysis are very large. Nevertheless, they are important to discuss because of their theoretical importance. And it should be remembered that when small effects are multiplied by each other as is the necessary practice when calculating indirect effects, it is not surprising in the path analysis that the magnitudes of the indirect effects are small. In this path analysis, the size of the effects is also compounded by the fact that multiplicative terms are involved in the paths.

Two additional factors should also be discussed that possibly explain the size of the effects. It can be recalled from the literature section of this dissertation that reading comprehension scores of the respondents in the NLSY Child survey are higher than the national average. This is most credited to the fact that these children may be accustomed to survey and standardized assessments. For example, most of the birth cohort had received the reading assessment up to five times before the 1998 assessment. It could be that this benefit in testing exposure reduces some of the magnitude of the relationships expected. If all of the reading scores are higher than normal, as is the case with this data set, there may be difficulties in generalizing to the population as a whole. It may even be that there is an under-representation of the
strength of the associations with delinquency. Hopefully, what the data analysis has done is present a sound theoretical orientation whereby future research may be guided. It could be when the dependent variable is actually assessing crime of a more violent nature than studied here, that the magnitude of the effects would be even larger. The reader is reminded that while the theory presented herein suggests that illiteracy is an important predictor of more aggressive, violent delinquency this current study is limited by the measures of delinquency made available in the NLSY child survey. Additional testing of specific crimes that are actually of a more violent nature is warranted.

The nature of the trend in criminology to identify early causes of later problem behavior demands that attention be given to the processes in the social structure that contribute to the delinquent trajectories. Therefore, attention has been given to analyzing what leads to reading acquisition in the first place, and how it is central to educational, developmental and career success. This focus brings forth attention to what impact reading deficiencies, in a stratified society, can have for later in life. The statistical findings are suggestive that reading comprehension is an important predictor of more serious delinquent behavior and the findings suggest that reading ability is just as important as IQ measures. This being said, there are limitations to the data beyond those already mentioned.

**Limitations:**

When data use self-report surveys there are important issues that need to be remembered. Research shows that juveniles are likely to under-report involvement and this practice of under reporting may vary with race, gender and age. Also when non-serious crime is the focus, the effect of any independent variable will be smaller because much of the juvenile sample is likely to engage in minor activities. Since important effects are lost when a collective measure such as overall delinquency is used, the decision was made to try and capture more serious activities. However, it can by no
means be suggested that the current analysis is an assessment of “serious”
delinquency. For example, there are no examples of violent or street crime represented
in these data. The measures of delinquency are simply computed from the available
questions on the NLSY child survey and do not reflect fully the range of violent crimes
and behaviors that might be studied. While this is common in any research project, to
be limited by the data available, another important next step is to assess violent
behavior. It is rare, however, to find measures of reading ability, IQ, all of the capital
variables and the necessary demographic variables in the same data set. Finding these
with delinquency/criminal behavior included is even more rare, so therefore, the minor
limitation of not actually measuring “violent delinquency” is an acceptable shortcoming.
For that matter, since murder, rape and so forth are such rare events; a dependent
variable that included such events would not be changed much from what we observe
here. Since an inverse statistical relationship is found with reading deficiency and
delinquent activity, it is expected that the effects will be even stronger when violent
criminal behavior is assessed.

Many of the most popular theories have employed collective measures of
delinquency that do not make distinctions among types and seriousness of delinquency.
Datesman, Scarpitti and Stephenson, (1975) and Agnew (1992) are a few which have
attempted to differentiate between degree and type of crime. There is an argument
whether it really matters. However, it is the logic presented in this paper that when a
large collectivity of activities is measured as is the case with an overall measure of
“delinquency” many important statistical relationships are masked. Since reading
deficiency is likely to lead to frustration and blocked opportunities, additional studies may
serve to focus on more aggressive criminal and delinquent behavior. In this event,
overall models may explain more variance in delinquent behavior and the magnitudes of
the coefficients may, in fact, be larger.
Another weakness in the data is that the model assumes that lack of reading comprehension leads to frustration, but this assumption is not statistically tested. Other research which suggests that the connection exists between illiteracy and frustration was presented in the literature review section (and appendix), and serves as the foundation here. It would have been useful to have had measures of frustration and such would be beneficial to include in future research, if possible.

While an attempt to separate effects of capital: social, human, cultural and physical has been made, in reality these variables may not be as empirically distinct as they appear to be here. These sociological forces are actually woven together rather tightly. Also, the creation of individual capital scales are limited by the available data, more perfect measure are certainly preferable. Again, however, these types of issues are common to most social research. We are often restrained by the available measures in the data. Hopefully, however an important theme has appeared in this work that issues of inequality and criminology should be merged.

Family well-being and educational success which contributes to variation of capital may vary spatially and as a function of local levels of class and race specific opportunities. The loss of industry and employment opportunities in certain areas affects the local tax base, educational expenditure, and family poverty rates’. Tomaskovic-Devey (1988), Tomaskovic-Devey and Roscigno (1996), and Roscigno and Ainsworth-Darnell (1999) establish this and remind us that we should expect institutional considerations, both familial and educational to be reflective and embedded in the spatial variation of labor market opportunity and stratification dynamics. The “importance of place” and other structural approaches importantly acknowledges that poverty and inequality outcomes are not simply the result of human or cultural capital deficiencies; but outcomes of inequality should be recognized as embedded structural level problems. Focusing on social problems as they relate to the degree of economic and social
opportunity (Tomaskovic-Devey, 1987) is important. Theorizing about inequality issues should demonstrate the embedded analysis of local political-economic practices and struggles. While a goal of this paper is to reveal some of the embedded structural processes of inequality, it under-develops the very important role of the local economic and political structures. This is an important point not fully developed in this paper. Tomaskovic-Devey and Roscigno, (1996) however, is a good source of review on the subject.

As with any survey instrument, response rates are always of concern. While in 1986 an attempt was made to assess all biological children of the 1979 birth cohort mothers, regardless of the child’s residency, because of time, expense and other difficulties, the sample eligible for assessment (starting in 1988) was restricted to children living full or part-time with their biological mother. Therefore, there is a portion of children that we know very little about. Although it is likely that these children not living with their mothers are more delinquent than the ones that are, not much else can be said about them.

Overall, the logic presented in this paper is that the importance of reading acquisition in crime and delinquency and stratification processes is not fully developed in the literature. That is, studies with ‘academic success” at the core should consider an even earlier determinant: reading failure. The literature review indicated that most of the available studies addressed overall academic success and not reading ability. It has been necessary to rely excessively on studies regarding academic failure in making inferences because the applicability to illiteracy has not fully been accomplished yet.
Future Research:

The path analysis presents a wealth of information and not all of it has been fully developed in this dissertation. For example there are mediating influences of social capital that have not been fully developed. Since the social capital variables and reading comprehension are in no way competing with one another and social capital is not mediated through literacy, the decision is made to eliminate extended discussion of social capital effects. However, a future research endeavor will be to take this section of the analysis and develop it further. Clearly, support is given in the findings here for social bond theory, as it is commonly understood in the criminological literature: exogenous variables influence social capital, which in turn serves to reduce delinquency. Also, in alignment with social bond theory, it could be worthwhile to include a measure of student’s grades. While we know from Hirschi and other social bond theorists that having “weak grades” is an important factor in predicting delinquency in social bond theory, we have not investigated whether poor reading ability is particularly responsible for the poor grades. It is likely that it is but statistical validation is warranted and understanding the role of reading ability in the relationship between weak bonds and increased delinquency can contribute to related theory.

While this study’s primary focus is a model of delinquency, some important secondary issues are of interest. For example, while the ability to learn to read is often contingent upon inherited cognitive factors such as intelligence, learning to read effectively is also a social process. The social conditions a child “inherits” will often have an influence on their reading success and the cumulative disadvantage can manifest itself in a trajectory that sets in motion a higher probability of delinquent and criminal behavior. So, if reading deficiency is a predictor of delinquency, the factors that contribute to reading success are important to further explore. The variables identified in
this study explain 30 percent of the variance in reading comprehension, which is a reasonably high percentage for research of this type.

Reading failure can trigger low self-esteem, reinforced frustration, academic failure, negative labels and a cumulative series of “damaging” events in the life course of the individual that could likely explain some of the variance in crime. While the literature suggests that reading failure triggers frustration and other negative emotions this has not been directly assessed in this study. The next level of this study can determine statistically whether reading deficiency fuels frustration and then determine if the frustration mediates more serious delinquency.

While the literature suggests that reading failure sparks delinquency, it could be that the reverse actually happens. Problem behavior may lead to reading difficulties. While these competing theories are acknowledged in related literature, the statistical validation is absent in this dissertation. The data set that has been used in this current analysis can also be used to assess these competing theories. It may be that illiteracy sparks the path to delinquency and delinquency adversely affects reading ability.

Reading failure should not be looked at as a “static” event but a culmination of processes that propels one towards illegal behavior and for that matter may be a logical explanation for why some do not “age out” of crime as easily as the others. Those who cannot read or even read poorly are likely to be blocked from opportunity. Reduced opportunity is likely to be a contributory factor to criminal behavior. It is suggested earlier in the paper that even marriage partners may be limited for those who are illiterate. When a partner is found, it is likely that they too may be disadvantaged in this regard and disadvantaged in terms of social economic standing. So the beneficial effects of marriage may be affected by this form of human capital. Again this is in alignment with the Matthew effect.
Since life course theory suggests that marriage and jobs are important considerations, the influence of literacy as it relates to these “trajectories” should be considered. Since the NLSY data is conducted annually, follow up studies of the cohort in this sample can be conducted. The current study has assessed that reading ability is an important mediator to delinquency; the next step will be to follow the cohort and determine if the cumulative process continues as predicted. A logical extension to the path analysis is to add an additional layer to determine if serious delinquent activity by juveniles is likely to lead to adult criminal behavior. And also, because the NLSY has primary interest of career trajectories, it will be easy to include employment patterns in the adult model. Considering all of these variables in a longitudinal study would provide a better test of life course theory.

Current theories must continue to establish casual links and specific “focal points” in the life course of individuals, and in the structure of society, which illuminate the mechanisms that contribute to patterns of crime, inequality and stratification. One could argue that we already know that academic success is related to reduced opportunities; however, this dissertation argues that the important role of reading acquisition, itself, has been minimized and warrants additional and continued attention.

**Social Implications and Societal Change:**

The previous pages have demonstrated that reading ability is understood as a skill determined in part by intelligence and in part as a social process. Disadvantaged positions in the social structure can contribute to an inability to learn to read effectively and reading failure can affect overall life's outcomes and more specifically criminal behavior.

This paper extends current research by applying the various forms of capital to reading deficiency. The social consequences of illiteracy are described and race and class issues are incorporated appropriately. The effect of many of the common
demographic variables on delinquency can be seen as being mediated through reading deficiency. What we have is a complicated web of social factors that contribute to illiteracy, and a myriad of social consequences that occur as a result which contribute to delinquency. In reality the dimensions of stratification overlap and interact therefore focusing on only one dimension would be incomplete and potentially misleading. In an attempt to be as thorough as possible, by including the use of direct, multiplicative and mediating tests of the data and by incorporating all the relevant forms of capital the models have resulted in some complexity in the findings.

Since disadvantage is correlated with reading deficiency and Blacks are more likely to be from a disadvantaged position, it follows that Blacks are likely to be disadvantaged in reading. Literacy improvement could help break down some of the legitimately recognized barriers that foster inequality. As mentioned, reading ability is recognized as an acceptable “sorting” mechanism in a stratified society. The attempt here has been to try to better understand its origins.

When considering methods to reduce reading disability two avenues are likely to be suggested: improving the experience at school or improving the experience at home. Several variables are related to both. From a policy standpoint the latter is much harder to achieve. Some parent-child interactions are rooted in class position, inequality, and likely to remain unless the class position is improved. Since class position is unlikely to change for many, education about the factors that contribute to success are important in order to empower those at the lower ends of a stratified society to be able to overcome some of their disadvantage. Placing a “band-aid” on the problem is by no means the answer, but education might help bridge gaps by taking away one legitimate mechanism that is used in a stratified society to sort individuals.

Since learning to read is a social process that begins very early in life, effective academic success campaigns might be beneficial. While some could argue that such
social agendas are already in place, obviously they are less effective than they could be. Racial differences are still noted in reading acquisition. More attention should be given to reading programs that alleviate poor reading.

A social agenda that promotes the positive influences that parents can have on the success of their children is necessary. Empowering the beginning “learner” with a repertoire of “tools” in which to navigate the literacy and school process is important. Cultural capital is found in this study as contributing to reading success.

The long-term benefits of reading to children at early, even prenatal ages, has been established in the literature. Celebrating small occurrences of success in speech and reading when they occur could help. Encouraging the appropriate kind of speech for literacy development and encouraging parents to be involved in the education of the children should be promoted. Making sure teachers are well trained in effective literacy programs is necessary. American society is too advanced not to have clear data establishing the most effective pedagogy for literacy instruction. It is shocking that more statistical analysis have not been done to verify which reading programs are actually most successful. According to the literature review conducted for this analysis, it is very surprising that more quantitative studies comparing pedagogy have not been done. Ideally, literacy instruction should not be a political issue and should not vary according to the place in the structure of a stratified society. The debate between whole language vs. phonics has been a long and political one (for related research see Farkas, 1990). While the current trend seems to merge the two instructional bases together, there is considerable variation in effective instructional guidelines that ensure reading success. There is also likely to be nationwide variation in skillful teachers who can effectively teach reading to children, as well as to adults.

Some people believe that the literacy issue was resolved in the 19th century; clearly it has not. Today illiteracy does not refer to the inability to read at all, like it did
when comparing illiterate countries to literate ones. In America, there are few that cannot read at least a little. There seems to be a lot of variation in how well one can read and comprehend, however.

In Life Course Theory, Sampson and Laub address how “turning points” can affect the likelihood of criminal involvement. To date, they have not specifically addressed the role of reading deficiencies, nor have they advanced stratification issues as fully as they might. They do briefly suggest that social capital is an important variable in understanding ones “turning points” and suggest that Matthew effects are important considerations. Since certain groups in society are more likely to be involved with the Criminal Justice System continuing to advance their work is important. Data suggest that a substantial portion of gaps in the well being of Blacks and Hispanics can be accounted for by differences in the opportunities and attainment of education. Researchers contend that improvement in the economic status of Blacks in the 1960’s and 1970’s came in part from improvements in educational attainment and school quality, especially in the South (Donohue and Heckman, 1991). While improvements in opportunity are noted, inequality still exists and the over-representation of Blacks in prison is a warning signal that more attention should be given until the problem is solved. Reading deficiency can have explanatory power as an early causal factor to incarceration and reinforced inequality.

Data support that Blacks are more likely to be from disadvantaged places, live in poverty, have a higher percentage of single family homes, as well as less social, human, cultural (as it is currently measured), and physical capital. It has been established that each of these processes are related to reading deficiencies. It is established that Blacks do have lower reading scores and lower overall academic achievement. We could also make the connection that the frustration that a student experiences due to reading failure can exhibit itself in problem behavior, delinquency and even drug use which can lead to
incarceration. We know reduced literacy skills and education are used to eliminate persons from legitimate opportunity. So there are two mechanisms working against the deficient reader that can contribute to being tracked away from legitimate opportunity. It is not argued here that a “literacy campaign” would magically correct inequality. Eliminating obvious barriers is nevertheless a good start. Perhaps education campaigns to promote the potential concern for increased number of children in the home, and encouragement of father’s presence in the home is important and should not be viewed as a moral debate—but a scientific one.

In the book *Class Counts*, Erik Olin Wright (1997) states that the essential condition of the people of the “underclass” is that they are oppressed because they do not have access to various kinds of productive resources or the necessary means to acquire the skills needed to make their labor power saleable. The underclass can consist of human beings that are largely expendable from the point of view of the logic of capitalism. In modern times, capitalism does not need the labor market power of the unemployed, the illiterate, undereducated, inner city [or rural] youth for example. Many of those in the middle and upper classes who are trying to retain their own power, prestige and position do not wish to compete with a large mass for their own jobs, so stereotyping and statistical discrimination and embedded sorting structures keep the other masses at a distance. Those in the underclass who become self-aware that they have little chance in a capitalistic society, whereby there are “keys” that have to be acquired for entry for better opportunity, eventually become self-aware that they are expendable to greater society are left with social, psychological scars. Therefore, what we have are large groups of individuals with blocked opportunities in a capitalistic society who find that society has little value or need for them and little value in themselves is a natural emotion.
Table 1 Descriptive Statistics for Variables

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<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Obsv. N</th>
<th>Inter-quartile Range</th>
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<td>1130</td>
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<td>.00</td>
<td>5.00</td>
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<td>.305</td>
<td>.460</td>
<td>.00</td>
<td>1.00</td>
<td>1261</td>
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<td>.423</td>
<td>.00</td>
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<td>1261</td>
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<td>Father in home</td>
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<td>1.00</td>
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### Table 2 Bivariate Correlation Matrix

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<tr>
<th></th>
<th>Del</th>
<th>Read</th>
<th>Digit</th>
<th>IQ</th>
<th>Cultcap</th>
<th>Soccap</th>
<th>Socorg</th>
<th>Mother Ed</th>
<th>Dad Home</th>
<th>Nkids</th>
<th>Hisp</th>
<th>Black</th>
<th>Male</th>
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<tr>
<td>Delinquency</td>
<td>1.00</td>
<td>-1.61**</td>
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<td>-.196**</td>
<td>-.196**</td>
<td>-.225**</td>
<td>-.186**</td>
<td>-.180**</td>
<td>.096*</td>
<td>.057</td>
<td>.147**</td>
<td>.193**</td>
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<td>Reading Comp.</td>
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<td>.335**</td>
<td>.495**</td>
<td>.323**</td>
<td>.101**</td>
<td>.211**</td>
<td>.315**</td>
<td>.228**</td>
<td>-.128**</td>
<td>-.059</td>
<td>-.295**</td>
<td>.052</td>
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<tr>
<td>Digit Span</td>
<td>1.00</td>
<td>.307**</td>
<td>.169**</td>
<td>.098**</td>
<td>.101**</td>
<td>.196**</td>
<td>.074**</td>
<td>-.052</td>
<td>-.085*</td>
<td>-.064</td>
<td>-.064</td>
<td>-.059</td>
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<td>.120**</td>
<td>.202**</td>
<td>.335**</td>
<td>.249**</td>
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<td>-.120**</td>
<td>-.343**</td>
<td>.007</td>
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<td>.199**</td>
<td>.289**</td>
<td>.376**</td>
<td>.251**</td>
<td>-.083*</td>
<td>-.162**</td>
<td>-.201**</td>
<td>-.010</td>
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<tr>
<td>Social Cap.</td>
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<td>.137**</td>
<td>.074**</td>
<td>-.088*</td>
<td>-.064</td>
<td>-.036</td>
<td>-.067</td>
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<td>.183**</td>
<td>-.069</td>
<td>-.001</td>
<td>-.294**</td>
<td>.013</td>
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<td>-.146**</td>
<td>-.020</td>
<td>-.014</td>
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<td>-.012</td>
<td>-.311**</td>
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<td></td>
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<tr>
<td>N of Kids</td>
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<td>.084*</td>
<td>.002</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Black</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

*p < .05 (two-tailed test). **p < .01 (two-tailed test).
Table 3  Serious Delinquency regressed on demographic, cognitive, capital, and interaction variables: unstandardized (standardized) (n = 1,262); Model 5 unstandardized (standardized betas from z scores); Model 6 unstandardized; interquartile range effects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6 (trimmed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unstandardized</td>
<td>unstandardized</td>
<td>unstandardized</td>
<td>unstandardized</td>
<td>unstandardized</td>
<td>unstandardized</td>
</tr>
<tr>
<td>IQ</td>
<td>-0.006 (-.140)**</td>
<td>-0.004 (-.095)**</td>
<td>-0.002 (-.061)</td>
<td>-0.000 (-.009)</td>
<td>-0.006 (-.009)*</td>
<td>-0.006 -1.150**</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.187 (.109)***</td>
<td>0.176 (.102)***</td>
<td>0.080 (.047)</td>
<td>0.096 (.056)</td>
<td>0.103</td>
<td>0.103*</td>
</tr>
<tr>
<td>Black</td>
<td>0.181 (.115)***</td>
<td>0.160 (.102)**</td>
<td>0.014 (.009)</td>
<td>-0.006 (-.004)</td>
<td>Omitted</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.264 (.182)***</td>
<td>0.268 (.185)***</td>
<td>0.275 (.189)***</td>
<td>0.265 (.181)***</td>
<td>0.267</td>
<td>.267***</td>
</tr>
<tr>
<td>Reading Comp.</td>
<td>-0.003 (-.090)**</td>
<td>-0.002 (-.061)*</td>
<td>-0.002 (-.068)*</td>
<td>-0.002 (-.068)*</td>
<td>-0.002 -0.092*</td>
<td></td>
</tr>
<tr>
<td>Father in Home</td>
<td>-0.166 (-.109)***</td>
<td>-0.143 (-.093)**</td>
<td>-0.155 (-.155)***</td>
<td>-0.155 (-.155)***</td>
<td>-0.155 -0.208***</td>
<td></td>
</tr>
<tr>
<td>Social Organ.</td>
<td>-0.050 (-.209)***</td>
<td>-0.051 (-.216)***</td>
<td>-0.052 (-.208)***</td>
<td>-0.052 (-.208)***</td>
<td>-0.052 -0.208***</td>
<td></td>
</tr>
<tr>
<td>Mother’s Ed.</td>
<td>-0.020 (-.063)*</td>
<td>-0.023 (-.072)*</td>
<td>-0.026 (-.052)**</td>
<td>-0.026 (-.052)**</td>
<td>-0.026 -0.052**</td>
<td></td>
</tr>
<tr>
<td>Number of Kids</td>
<td>0.042 (.065)*</td>
<td>0.052 (.081)**</td>
<td>0.051 (.051)**</td>
<td>0.051 (.051)**</td>
<td>0.051 -0.052**</td>
<td></td>
</tr>
<tr>
<td>Digit Span</td>
<td>0.024 (.097)***</td>
<td>0.025 (.107)**</td>
<td>0.025 (.084)***</td>
<td>0.025 (.084)***</td>
<td>0.025 -0.084***</td>
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</tr>
<tr>
<td>Social Capital</td>
<td>-0.019 (-.077)**</td>
<td>-0.020 (-.092)**</td>
<td>-0.021 (-.294)**</td>
<td>-0.021 (-.294)**</td>
<td>-0.021 -0.294**</td>
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</tr>
<tr>
<td>Cultural Capital</td>
<td>-0.031 (-.049)</td>
<td>-0.038 (-.068)*</td>
<td>Omitted</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interactions

Father in Home x
Respondent’s IQ 0.006 (.080)** 0.006 .060**
Read x # of kids 0.002 (.068)** 0.001 .058*
Hispanic x IQ 0.006 (.066)* 0.006 .058*

Constant 1.097*** .703*** .706*** 1.48*** 0.531*** 0.533***
Adj. R² = .019 .065 .071 .150 .161 .160

1Race is coded as two mutually exclusive dummy variables (Black, Hispanic) with Whites as the excluded category.
Data controls were run in each model, but not reported because of non-significance and presentation clarity.
*p < .05; **p < .01; ***p < .001
<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 “Digit Span”</th>
<th>Model 2 “IQ”</th>
<th>Model 3 “Reading”</th>
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<tbody>
<tr>
<td>IQ</td>
<td>Omitted</td>
<td>-.005 (.130)**</td>
<td>Omitted</td>
</tr>
<tr>
<td>Hispanic¹</td>
<td>.097 (.057)</td>
<td>.105 (.061)*</td>
<td>.077 (.045)</td>
</tr>
<tr>
<td>Black¹</td>
<td>.029 (.019)</td>
<td>.005 (.003)</td>
<td>.009 (.006)</td>
</tr>
<tr>
<td>Male</td>
<td>.263 (.182)***</td>
<td>.255 (.175)***</td>
<td>.266 (.183)***</td>
</tr>
<tr>
<td>Reading Comp.</td>
<td>Omitted</td>
<td>Omitted</td>
<td>-.001 (.037)</td>
</tr>
<tr>
<td>Father in Home</td>
<td>-.168 (-.109)***</td>
<td>-.148 (-.096)***</td>
<td>-.169 (-.110)***</td>
</tr>
<tr>
<td>Social Organ.</td>
<td>-.050 (-.210)***</td>
<td>-.050 (-.210)***</td>
<td>-.050 (-.208)***</td>
</tr>
<tr>
<td>Mother’s Ed.</td>
<td>-.024 (-.075)**</td>
<td>-.021 (-.065)*</td>
<td>-.019 (-.061)*</td>
</tr>
<tr>
<td>Number of Kids</td>
<td>.045 (.069)*</td>
<td>.042 (.064)*</td>
<td>.052 (.080)***</td>
</tr>
<tr>
<td>Digit Span</td>
<td>.031 (.123)***</td>
<td>Omitted</td>
<td>Omitted</td>
</tr>
<tr>
<td>Social Capital</td>
<td>-.021 (-.085)***</td>
<td>-.020 (-.081)***</td>
<td>-.018 (-.073)***</td>
</tr>
<tr>
<td>Cultural Capital</td>
<td>-.041 (-.063)*</td>
<td>-.038 (-.059)*</td>
<td>-.033 (-.052)</td>
</tr>
<tr>
<td>Interactions²</td>
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<td></td>
</tr>
<tr>
<td>Father in Home x</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Respondent’s IQ</td>
<td>.006 (.120)**</td>
<td></td>
<td>.002 (.067)*</td>
</tr>
<tr>
<td>Read x # of kids</td>
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<td></td>
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</tr>
<tr>
<td>Hispanic x IQ</td>
<td>.006 (.068)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black x digit</td>
<td>-.034 (-.077)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.535***</td>
<td>.527***</td>
<td>.549***</td>
</tr>
<tr>
<td>Adj. R² =</td>
<td>.152</td>
<td>.149</td>
<td>.148</td>
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</tbody>
</table>

¹Race is coded as two mutually exclusive dummy variables (Black, Hispanic) with Whites as the excluded category.
²The models with interactions reflect variables centered at the mean.
*p < .05; **p < .01; ***p < .001.
Table 5 Reading Comprehension, Social Capital, Cultural Capital unstandardized (standardized from z scores); interquartile range effects (n = 1,262)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 “Reading Comprehension”</th>
<th>Model 2 “Social Capital”</th>
<th>Model 3 “Cultural Capital”</th>
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<tbody>
<tr>
<td></td>
<td>IQ</td>
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</tr>
<tr>
<td></td>
<td>.344 (.238)</td>
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<td>.009 (.143)</td>
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<td>Black1</td>
<td>-6.32 (-.104)</td>
<td>-0.92 (-.103)</td>
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<tr>
<td></td>
<td>Male</td>
<td>2.08 (.037)</td>
<td>-0.092 (-.071)</td>
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<tr>
<td></td>
<td>Father in Home</td>
<td>1.20 (.021)</td>
<td>-0.412 (.120)</td>
</tr>
<tr>
<td></td>
<td>Social Organ.</td>
<td>.261 (.029)</td>
<td>.122 (.15)</td>
</tr>
<tr>
<td></td>
<td>Mother’s Ed.</td>
<td>.995 (.081)</td>
<td>.995 (.081)</td>
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<tr>
<td></td>
<td>Number of Kids</td>
<td>-1.43 (-.058)</td>
<td>-0.15 (.012)</td>
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<td>Digit Span</td>
<td>1.70 (.189)</td>
<td>.012 (.029)</td>
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<tr>
<td></td>
<td>Social Capital</td>
<td>.122 (.015)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cultural Capital</td>
<td>3.07 (.142)</td>
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<tr>
<td></td>
<td>Interactions</td>
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</tr>
<tr>
<td></td>
<td>Cultural Capital x IQ</td>
<td>.077 (.069)</td>
<td>.004 (.065)</td>
</tr>
<tr>
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<td>Hispanic x # of kids</td>
<td>-342 (-.050)</td>
<td>-342 (-.050)</td>
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<tr>
<td></td>
<td>Hispanic x dad home</td>
<td>-820 (-.055)</td>
<td>-820 (-.055)</td>
</tr>
<tr>
<td></td>
<td>Black x digit</td>
<td>-223 (-.095)</td>
<td>-223 (-.095)</td>
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<td></td>
<td>IQ x # of kids</td>
<td>-.076 (-.059)</td>
<td>.004 (.065)</td>
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<tr>
<td></td>
<td>Social Org x IQ</td>
<td>.011 (.068)</td>
<td>.011 (.068)</td>
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<td></td>
<td>Black x dad home</td>
<td>-328 (-.057)</td>
<td>-328 (-.057)</td>
</tr>
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<td></td>
<td>IQ x Gender</td>
<td>-.052 (-.029)</td>
<td>-.052 (-.029)</td>
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<td></td>
<td>Black x Soc org</td>
<td>-.048 (-.052)</td>
<td>-.048 (-.052)</td>
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<td>Constant</td>
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<td>13.72***</td>
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<td></td>
<td>Adj. $R^2$</td>
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<td>.035</td>
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</tbody>
</table>

1Race is coded as two mutually exclusive dummy variables (Black, Hispanic) with Whites as the excluded category. 2The models with interactions reflect variables centered at the mean. Data controls are entered with each model, but not reported due to non-significance and clarity.

*p < .05; **p < .01; ***p < .001
Graph One: Interaction effect of IQ x Father in the Home on Delinquency

IQ at +/- 2 standard deviations

No Father Home
Father Home
Graph Two: Interaction Effects for Number of Kids in the Home by Reading Comp on Del'cy

- Small Family
- Average Family
- Large Family
- Very Large Family

Reading Comp at +/- 1 std dev

Del'cy
Graph Three: Interaction Effect for IQ x Hispanic on Delinquency
Model 1 Path Analysis

Model run with interactions, but omitted for clarity.
Model 2: Interactions of Serious Delinquency

A: IQ x Father Living in Home; IQ x Hispanic

B: Reading Comprehension x Number of Kids
Model 3: Interactions of Reading Comprehension

A: IQ x Number of Kids; IQ x Cultural Capital

- Number of Kids
- IQ
- Cultural Capital

Reading Comp

Path coefficients:
- IQ → Reading Comp: 0.238
- Number of Kids → Reading Comp: 0.058
- Cultural Capital → Reading Comp: 0.142
- IQ x Number of Kids: 0.059
- IQ x Cultural Capital: 0.069
Model 4: Interactions of Social Capital

A: Hispanic x Number of Kids; Hispanic x Father Living in Home

Number of Kids

Hispanic

Father Living in Home

Social Capital

Digit Span

Black

B: Digit Span x Black
Model 5: Interactions of Cultural Capital

A: IQ x Number of Kids; IQ x Social Organization

Number of Kids

IQ

Cultural Capital

Social Organization

B: Father Living in Home x Black

Black

Father Living in Home

Cultural Capital
Model 5 continued: Interactions of Cultural Capital

C: IQ x Male

D: Social Organization x Black
APPENDIX A

EXTENDED LITERATURE REVIEW: HOW WE LEARN TO READ:

Although most everyone agrees that being able to read is important in American society, “there is little agreement among citizens, parents, teachers and researchers about how best and most successfully to help young children learn to read” (Stein, et. al, 1993). The Human Services Reauthorization Act of 1986, pursuit to Public Law 99-425 directed the Secretary of Education to investigate, compile, and evaluate methods of beginning reading instruction. In the course of conducting this study Commission members reviewed and synthesized hundreds of research studies about many aspects of reading. Some of these findings will be reported momentarily but first it should be made clear that the one agreement reached is that children who do not learn to read well in the early grades will likely remain poor readers, even illiterate for the rest of their years. Reading achievement at the end of first grade strongly predicts their reading performance during their later years (Stein, et al. 1993). Therefore, the logical deduction is that the early foundation, even before school begins is imperative to success.

Overall, the Commission’s report is of interest to those interested in reading instruction; they specifically break their evaluation into three major categories: Emergent Literacy Instruction, Beginning Reading Instruction and Remedial Decoding Instruction. Educators interested in reading instruction should review this study entitled “The Beginning Reading Instruction Study” by the Office of Research for the U.S. Department of Education.

The basic generalization from the Commission is that reading is a constructive process, reading must be fluent, reading must be strategic, reading requires motivation and reading is a continuously developing skill, which begins very early. In describing reading instruction the Commission states that successful
reading instruction “takes the form of explanation, advice, coaching and practice on the essential aspects of the process” (p. 17). The Commission concludes that the best programs are those that balance between “practice of the parts and practice of the whole” (p17). What the members of the Commission are alluding to is a proper balance between phonics and whole language. We know there are advocates of either approach. Historically and politically we have seen educational trends act similarly to a pendulum clock moving back and forth. Indeed it is a political fueled issue as well as a research topic in and of itself. While a current trend appears to balance the two approaches, there is still controversy and disagreement. We should remember that the decision of which base method to utilize at school is a bureaucratic one, often excluding parents, children and even teachers. Those outside the educational arena may have little knowledge about reading program success or the politics involved in the decision making of which programs to use. If less effective methods vary geographically or temporally we can understand variation in reading acquisition as a structural level problem outside of the control of the individual. Again another issue worthy of many pages in this paper, but will not be fully developed here. For a more complete review of this issue refer to George Farkas (1990).

As for the two basic approaches, some experts think it is important that reading instruction begin with the “parts” by the teaching of intensive, systematic phonics as the base for word recognition. Providing strategies to enable students to “break the code” and develop an understanding of the connectedness between letters and sound are important in phonemic based instruction. It can be argued that learning to read requires cracking the alphabetic code and learning to synthesize printed letters and their sounds together to form words and read print.
In contrast those experts who advocate a meaning centered approach believe that reading will develop naturally as children interact with words, sentences and ideas that appear as a part of a normal literacy experiences. These experiences include talking about print and books, sharing of text and writing about meaningful stories. This is the basic notion of the “whole language” approach. Each of these approaches will be explored in greater detail later in this paper.

The Commission also brings attention to role of language development as an important factor in learning to read successfully. In the Chapter on emerging literacy, the importance of children’s role with language is stressed as an early foundation. Kindergarten programs should emphasis oral language as important first steps to reading. Although not specifically addressed in the study, cultural language differences and linguistic sound variation of American children can influence reading success and may not be something easily remedied by early education teachers. Reading builds on oral language; if this foundation is weak then progress in reading will be slow and uncertain.

The report further concludes that being read to in the home and early exposure to words and literature is very important. In fact the Commission goes as far as to conclude that the single most important activity for building the knowledge required for eventual success in reading is in being read aloud to at early ages. The commission specifically states that parents’ role is crucial and the parents have an obligation to support this early foundation if there is to be successful development. Reading lessons at home and at school should stress the understanding and appreciation for the text being read and fun and interesting books should be selected. Once children are able to begin reading on their own they should be encouraged do so both orally and silently. Positive reinforcement is important.
Overall, the research evaluation by the Commission suggests strong predictors of reading success are: knowledge about the nature of text, linguistic and phonemic awareness and knowledge of the letters of the alphabet. Learning to recognize and discriminate the shapes and sounds of letters of the alphabet is a difficult process and ideally children should have this foundation before they reach school age. This is why factors relating to the family and social background of the developing reader are important in the equation of reading acquisition; an area to be further addressed in this paper. The acquisition of literacy results from an interaction of cognitive experiences. This paper addresses these issues first.

The Cognitive Experience:

As mentioned above and broadly classified print awareness, phonological awareness, and oral language are at the base of reading success. Research suggests instructional programs that have been based on these three factors have been successful in promoting literacy development of children in kindergarten (see O’Conner et al., 1998, Blackman, et al., 1994). Researchers contend that three “developmental pillars” are important for successful reading acquisition (O’Connor et al.1998). According to O’Connor and other researchers, the first pillar or foundation is receptive and expressive language. While formal training is not necessary for achieving this foundation, an environment that includes accurate language users, who are willing to interact with young impressionable language learners, is important. If conditions are not optimal for the second and third foundations then children face a daunting learning challenge that some children will be unprepared to meet.

The second foundation consists of an awareness of the structure and understanding of print. A basic knowledge of how to understand the process of print, reading from the left to the right, knowing that words are composed of letters, knowing that there are spaces between words, and knowing that written print is
similar to but different from the language we use when talking are very important early foundations. This pillar could be accomplished more easily if the children’s home environment promotes effective strategies for success.

The third foundation is phonological awareness. Current research suggests “individual differences in phonological awareness are more predictive of children’s success in reading and spelling than any other language or cognitive skill” (see O’Connor et. al. 1998). Since phonological awareness is a reoccurring theme in the literature, we now turn to a more detailed discussion.

**The Importance of Phonemic Awareness:**

It is argued that one of the most important factors for reading development is Phonemic Awareness. Before children can make sense of alphabetic principles and learn to effectively read they must understand sound patterns. Something once learned is comparable to involuntary reflexes, but does not come naturally at first and must be formally taught. The small patterns of speech that correspond to letters of an alphabetic writing system are called Phonemes. The comprehension that language is composed of these small sounds is termed Phonemic Awareness. Phonology is the study of the unconscious rules governing speech and sound production. And Phonetics is the study of the way in which speech sounds are articulated (see Adams et al. 1998). Research indicates that without related, direct instructional support in this arena difficulty in reading can be expected. Children coming from less literacy rich background are at a serious disadvantage (Adams et al. 1998).

George Farkas (1990) has written about the effect of cultural and language patterns deterring the development of effective reading and will be addressed later in this paper. Basically, cultural patterns, language variation and linguistic differences
can influence phonemic development, which affects reading abilities. This is part could explain some of the racial and ethnic variation in reading ability.

Some of the difficulty in acquiring phonemic awareness and thus reading success is that from person to person, word to word, the sound of any given phoneme can vary considerably. Such variations in spoken language for same meaning words vary by region, culture, dialects and individuals. Variations in spoken form that do not indicate a difference in meaning are referred to as allophones of a phoneme (Adams, et al. 1998). A simple example of this is can be understood by analyzing linguistics in the deep South of the U.S. whereby words ending in “ing” or “er” are shortened; an example would be “working” pronounced as “workin”. An example often used in the literature is “grease”. In the northern part of the country the pronunciation usually rhymes with peace; in parts of the south it rhymes with sneeze. We also know that there is variation in vowel sounds and that phonemes are not spoken as separate unites, but are co-articulated or blended together. From a linguistic standpoint variation exists in “blending” techniques that influence reading skills as well.

Not only are words with the same meaning pronounced differently, but also words with different meaning are often pronounced the same such as “pin” and “pen”. Because phonemic awareness is an important determinant of reading success such variation in pronunciations is potentially problematic to the novice reader. If we are hearing and speaking a word very differently than how it is spelled or read, difficulty in learning to read may result. Research suggests that a child’s level of phonemic awareness on entering school is the strongest single determinant of the success or failure of reading acquisition (Adams et al., 1998; Adams, 1990; and Stanovich, 1986). Adams (1998) presents a review of the literature supporting that this holds true regardless of the country. Similar findings have been found for
Swedish, Norwegian, Spanish, French, Portuguese, Russian and Chinese students. Without going into extensive detail regarding cross-cultural studies in this paper, mention should be made that despite diversity and cultural models of reading success are similar. For Chinese children in Hong Kong and American children in the U.S. a study by McBride-Chang and Kail, (2002) find that across groups the strongest predictor of reading is phonological skill. These authors can also be reviewed for review of other cross-cultural studies sharing similar results. The ability to analyze words into sounds is the skill that promotes successful reading (Wagner, et al. 1994) and serves as a predictive variable for preschool children's variance in their reading proficiency at the end of first grade (Blackman, 1991; Stanovich, 1986; Wagner et al., 1994). Certainly, phonemic development is influenced by background characteristics before school; but also the early schooling experience itself is important. For example, a well-known study by Scanlon and Vellutino, (1997) find that the best first grade readers come from kindergarten classes whereby phonological awareness was highly emphasized. Readers who are interested in additional recent research on phonology can refer to Treiman (1993), Parker and Riley (1994), Moats (1995) and Adams et al. (1998). Overall, the importance of phonemic awareness in reading and spelling development has been well substantiated in the literature (see Adams, 1990 for review).

However, while the evidence regarding the importance of phonics seems concrete, not all are in agreement. The proponents of Phonemic instruction can be equally matched with the proponents of the Whole Language approach.

**The Debate Continues: The Importance of Whole Language**

The evidence on what factors are necessary for effective reading is not conclusive. Historically there has been a strong political debate. It continues. However, during the 1950’s and 1960’s the language experience was predominate.
This approach stressed sight word recognition and contended that sound and symbol recognition would occur naturally on its own. During the 1980's and the 1990's the whole language approach dominated the literature, and there are still dedicated advocates of this approach to reading.

In a true whole language approach there is no systematic plan for teaching phonics. Phonemic instruction is intended to spontaneously “pop up” in daily routines. Critics argue that unskilled teachers will be disadvantaged in teaching their students with this method (see Schiller, 2001). This is why now many are advocating for formal inclusion of techniques in school curriculum.

Historically there has been division on the two primary schools of thought and although we continue to find loyal advocates of whole language or phonemic approach fortunately, the more recent trend is to find the promotion of the blending of the two approaches.

A worthy research project, beyond the scope of this paper would be to evaluate temporal and regional variation in reading success based on the reading model implemented by the school. It could be that some schools utilize more effective models and employ better skilled instructors to teach those models. As already alluded to earlier individual, school, and even community sociological and economic issues may influence individual reading outcomes.

**Literacy is a Social Process:**

Social interaction or Sociological issues were often overlooked or downplayed in the literature. However, literacy is a social process. It occurs in the context of children’s interactions with other children and adults (Schiller, 2001).

The process of learning to read does not begin when the child enters school. Learning to become literate begins long before children receive formal reading lessons. Prior to the 1970's conceptions of reading readiness were based on
assumptions about maturity, mental age, and IQ score (O’Connor et al 1998); and little attention was given to Sociological factors. Even today we probably underestimate the influence of social, psychological and political forces on literacy rates.

After the 1970’s, research began to conclude that parents of high-achieving students have a specific method of interacting with them, including an academic nurturing style, an emotionally supportive home life and reassurance techniques when the child encounters failure (Clark, 1983). Most work has looked at the social effects on “overall academic success” and less attention has been given to the effects on literacy. Vygotsky (1978), however, developed a Social –Interactionist perspective that suggests scaffold interactions between child and adult are crucial for literacy. Cognitive process such as meta-linguistics, phonological awareness, oral language and knowledge about print are developed through these relationships (see O’Conner, 1998; Blachman, 1994; for discussion). In this theory, becoming literate is a process of social interaction between children and capable adults. Most other work however continued to focus on the influential background factors that contribute to overall academic success and not specifically to reading acquisition. For example, during the 1960’s and 70’s Sociologists were studying processes of intergenerational mobility (see Hallinan, 2001 for review), family background variables such as fathers education and/or father’s occupation as influencing the academic outcome of their sons. Also around the same time, the Coleman Report (Coleman et al., 1966) and the more controversial Moynihan Report (Moynihan, 1965) demonstrated that family background was even a more important predictor of achievement differences than were school factors. And the logic began to be reinforced that academic achievement is not solely contingent on intellectual ability or quality of instruction, but that an array of sociological variables contribute to academic success. Some of the
related research on academic achievement “lost favor” for various reasons during this time, especially works alluding to racial variations, but after the mid 1980’s educators and researchers began to incorporate more complex mediating factors. A few scholars even tied such processes directly to literacy. For example, the “Emergent Literacy Perspective” suggests that a child’s sociological, psychological and linguistic activities prior to first grade make a significant difference in the child’s reading success (see Dickinson and Smith, 1996; Maclean et al. 1987, Scanlon and Vellutino, 1997; Scarborough et al., 1991; Snow and Weisman, 1996; Wells, 1995; Whitehurst, 1996; Whitehurst et al., 1988).

Increasingly, it has become recognized that the social environment is influential in a child’s overall emotional and educational development and the effects of the family and social environment can play a significant role specifically in reading acquisition. The influence of “Capital” is an important consideration.
Appendix B:  

Extended Literature Review: Reading Failure and “Problem Behavior”:

Unlike the relationship between reading failure and school failure a considerable amount of both qualitative and quantitative attention has been given to the relationship between reading deficiency and problem behavior. Problem behavior is then translated into school failure. The three basic research questions related are:

1) Reading disabilities may lead to behavior problems. School failure can create frustration and low self-esteem and the child may respond with antisocial behavior and aggression. The ultimate cause to be considered in this relationship is reading deficiency.

2) Behavior problems may lead to reading disability, thus behavior problems can affect the child’s motivation and ability to benefit from teaching and impede academic development, specifically reading acquisition.

3) Both reading disabilities and behavior problems can be the result of underlying factors such as social conditions including harmful home-life or language deficiencies, or physical / mental impairments.

Rutter and Yule, (1970) is an older study but has a good review of the three basic models mentioned above. It is quite logical to assume that each of the above hypotheses could be true and intervention should be based accordingly.

Longitudinal studies can be used to access reading skill, problem behavior and social conditions at different points in time, lending itself to the ability of showing cause and effect. Much of the research thus far however, has been examined by means of cross-sectional studies, however (Gellert and Elbro, 1999) and have been more limiting in explanatory power. We will briefly review cross sectional studies and then move quickly to a more detailed review of longitudinal based studies. For many
of these studies reading deficiency has been understood as a form of learning
disability such as “dyslexia”. A consistent theme, however, is that dyslexia does not
seem to be fully understood and it definitely has been measured differently in most
studies, resulting in methodological concerns, as well as much confusion over what
dyslexia really is.

Cross Sectional Data:

Several cross sectional studies show correlation between “dyslexia” and anti-
social behavior. Such research attention was predominating during the 1970’s when
Berger et al. (1997) studied the prevalence of teacher rated behavior problems
among dyslexic school children. In all, 2331 English children at age 10 were studied
in London and Isle of Wight. Children who scored more than two standard deviations
below average for expectation for “intelligence and age” ratio were classified as
“dyslexic”. The scores from the “reading retarded” group and the scores from “normal
readers” were compared against a behavior scale and consistently the reading
deficient children had significantly more behavior problems. In the London group
over 49% of the boys and 31% of the girls who were diagnosed as “dyslexic” were
assessed as antisocial children as compared to the whole London group whereby
only 24.5% of the boys and 13% of the girls were classified as anti-social. In the Isle
of Wight group 35% of the dyslexic boys and 14.3% of the dyslexia girls were
classified as antisocial as compared with about 8% of the normal readers who were
male and 5% of the female non-dyslexia group. Sturge (1982) did a follow up study
and find statistical significance that dyslexia and antisocial behavior occur together at
a higher level than is to be expected by chance.

Specifically assessing Juvenile delinquency a popular study in Finland (see
Virkkunen and Nutil, 1976) draws similar conclusions. In this study a later “look” was
taken at a group of males who had been diagnosed and treated for dyslexia in their
earlier years. It was found that over 12% of these men had been convicted for
criminal offenses compared to only 1.5% of the Finnish adolescent population. Other
more recent studies have found similar findings (for example see, Alm and
Anderson, 1997) but most are statistically limited by small sample size and the
classification schemes used to classify as dyslexic is questionable. It has been
thought of more recently that dyslexia may be a problem with phonological word
decoding issues, rather than a “learning disability” and many of these earlier studies
did not assess phonological skills (see Gellert and Elbro, 1999). Because of the
weakness with early cross sectional data the remaining attention will be given to
longitudinal studies.

Longitudinal Studies:

It is common in these studies that behavior is usually assessed by Rutter’s
behavior questionnaire and Conner’s scale completed by parents, teachers or both.
Background variables and home environment are assessed by interviews with the
parent and researcher observations. A variety of reading tests such as the Burt
Word Reading Test and the Neale Analysis of Reading Ability are used to assess
reading skill. A popular method of assessing non-verbal intelligence is through
Mental Maturity Scales such as Columbia and IQ is often assessed through
Intelligence test such as WISC-R. In most studies family SES, family size, parental
separation and reports of marriage counseling are incorporated.

Gellert and Elbro (1999) review longitudinal studies and find support for the
following three hypotheses: First behavior problems may lead to reading disabilities.
The longitudinal assessment is between early behavior problems and later occurring
reading disabilities (See Jorm, et al., 1986; McGee et al., 1988; Williams and McGee,
Second, reading disabilities may lead to behavior problems. The longitudinal assessment is between early reading difficulties and later behavioral problems, including delinquency (See Maughan et al.; 1985; Esser and Schmidt, 1993; and Williams and McGee, 1994 for support).

And third, reading disabilities as well as behavior problems may be due to an underlying factor (See Richman et al., 1982; Silva et. al., 1987; Williams and McGee, 1994; Fergusson and Lynskey, 1997 for support). It could be that some common underlying factor is causing both. For example, early language difficulties could be a contributing factor to both problem behavior and reading deficiency (Gellert and Elbro, 1999). This is a point is important to note because social background factors could be influential and can serve beneficial in explaining racial and ethnic variations in both reading and behavioral issues. George Farkas has done work regarding this and finds that linguistic variation is a contributing factor to racial and ethnic variation in reading ability.

Other reviews of research, such as Williams and McGee, find support for all three hypotheses as well. Gellert and Elbro, (1999) reviewed earlier studies and conclude that ‘with reservations with regard to differences in the design studies, there is statistical support that there is a link with reading deficiencies in the early school years and problem behavior in the later school years.’

It is interesting to note that these school surveys do not account for nor represent those students who have been expelled or quit school. Those involved with the Criminal Justice System are not assessed either. Therefore, actual numbers may be even much higher than studies failing to consider who these “populations” reflect.

In the Jorm study and the Fergusson and Lynskey study weakness in reading is attributed in part to behavior problems existing prior to the time of reading.
acquisition in school. When children have early behavior problems logic suggests that the ability to focus on the tasks necessary to accomplish academic success such as reading is questionable. However, two issues are important to note regarding this study, first these studies classified “dyslexia” and “reading deficiency” separately and finds that the dyslexic group is more similar to the normal readers in regards to behavior. Classifying and understanding the difference between children who are dyslexic and those who just simply do not have reading skills are important to note and worthy of much more research attention.

These two studies find that factors related to the children’s home environment also contribute to differences among the groups. Researchers acknowledge that home environment is very important in understanding both early problem behavior and a failure to appropriately acquire reading skills. Many of these social background characteristics were developed in the section of the dissertation on what factors contribute to reading success and could encourage the probability for both types of negative outcomes to occur.

A small German study conducted by Esser and Schmidt (1993) has noteworthy findings. A sample of about 400 children were tested at age 8 for reading and spelling skills, non-verbal intelligence, language skills, articulation and visual-motor skills. At the age of 8, 13, and 18 years parents and children were interviewed. This study finds that at all age levels the group of students diagnosed as dyslexic have a significant higher level of behavior problems than the normal readers (p<0.05). At the age of 18 nearly 25% of the dyslexic group had been convicted of a crime as opposed to only 5% of the normal readers. The difference is statistically significant at point 0.001. This study does not separate varying types of reading deficiency but compares normal readers with deficient readers. There are
also several other studies with similar findings (see Maughan et al., 1985; Richman et al. 1992) however, there sample size is very low.

Fergusson and Lynskey (1997) studied a large sample of New Zealand students from birth to the age of 16. At age 6, 10, 12 and 14 the researchers found that significantly higher rates of behavior problems (reported by mothers and teachers) among boys classified as “reading retarded” than among those boys with normal reading skills (p<0.05). The same holds true for girls in age categories in 6, 10, and 12. However, it is interesting to note that upon a closer statistical examination home environment and early behavior problems reported at age 6 largely explained the association between reading retardation at age 8 and subsequent behavior problems. When controlling for home environment and early behavior problems, dyslexia was unrelated to later behavior problems (see Gellert and Elbro, 1999). Again, Sociological variables continue to appear as significant factors.

In an older study, McGee et al. (1986) find similar results with another large sample, 925 children were studied every other year beginning at age three. Results indicate that both disabled readers and dyslexic readers from the age of five displayed a significantly higher degree of aggressive behavior than did the normal readers. However, it is interesting to note in this study that according to teacher assessments, the reading retarded group shows an increase in total problem scores from ages 5 to 7 while the dyslexic group total behavior problem score peak later at ages 7 to 9. The two groups of problem readers continued to be identified by their teachers as behavior problems throughout the remainder of the study observation at age 11. In all, the disabled readers are about three times more likely than the normal readers to have behavioral problems. The difference in the age of the onset of problem behavior is worthy to note. The authors suggest that this may be due to a
general lower level of intelligence among the reading retarded group, which may have resulted in earlier difficulties at school. The dyslexic group, however, may have shown an increase in problem behavior as they continued to become frustrated with their failure to read because their problem behavior did not start until later. How the individual internalized the difficulty with reading is potentially important. How they are dealt with by the school system is also an important factor to consider. For the dyslexic group whose intelligence is probably higher than the reading retarded group, it is interesting to note that their problem behavior started later. The “frustration” with the reading experience could be a direct link to problem behavior. While the onset of the problem might be different for the two groups the conclusion is the same because the study shows that there is no difference at age 11 in regards to behavior problems between the two reading deficient groups. The only difference is between these two groups and the normal readers; normal readers being much less likely to exhibit behavior problems. On a side note, it should be mentioned that McGee et al. conducted a follow up study of the children and find that the reading disabled boys continued to display a high degree of behavior problems indicated by both parent scores and teacher scores in later years.

The above mentioned studies do an adequate task of noting contributing sociological factors. Once controls such as family background are added to the models their importance becomes apparent. For example, “family adversity” (a score composed of low socio-economic status, large family size, low mental ability, parental separation, and reports of marriage counseling) is found to be higher in the two groups of disabled readers when compared to the normal readers.

McGee concludes that the experience of reading failure may exacerbate already existing problems; but it cannot be assumed that the behavior problems are the cause of later reading failure. The data are more suggestive that reading
problems contribute to later behavior problems. However the authors remind readers that unknown external causes to both reading deficiencies and problem behavior cannot be dismissed. As always, it is difficult to isolate all potential factors, especially when data sets are limiting. However enough evidence does exist to validate the logic being presented.

While all background characteristics are not controlled in the above mentioned studies, common correlations are noted between social background disadvantage, such as low SES, single parent home and higher number of siblings, and inverse relationships with reading skill, similar to the Matthew effect presented in this dissertation. The connection with social background factors and reading acquisition is well developed within the body of this paper, but one area less developed related to social background characteristics, is language development. Language development seems to be connected closely to reading development. The significance of early language development, which is the ability to speak clearly and without developmental delay, seems to be solidified by research during the 1980’s and 1990’s.

Earlier studies conducted by Richman et al. (1982) as well as Silva et al. (1987) focus on language development prior to school and find support of the importance of this variable. Scarborough, (1990, 1991) and Donahue et. al. (1994) can be referred to for supporting studies as well. In the Richman et al. (1982) study, while the sample was small at 185 students, the findings are noteworthy. Children were studied at 3, 4 and 8. Parents assessed behavior for all three ages and teachers assessed behavior at age 8. Language development scales are utilized, reading skills and intelligence levels are assessed. The authors did not find any behavior problems at the age of three and reading disabilities at the age of 8 and interpret this finding as indirect support for the hypothesis that behavior problems are
more likely to develop as an effect of school failure over a period of time. At the age of three, 59% of the children who were identified with “language delay” problems (corresponding to being “behind” at least 9 months in chronological age) also displayed behavioral problems compared to only 14% of the total sample. The longitudinal study continued to show that those with language development problems continue to have behavioral problems in the later years. Stevenson (1989) did a follow up study and show that those with language development problems are more likely to have reading difficulty. Over 60% of the groups with reading deficiency show delayed language development at preschool at ages of three and four. This data suggest that language delay can play an important role in limiting reading success. It would have been even better if the study assessed what background factors contribute to the language delay. Could factors like how much time a parent or adult spends fostering language development matter? Or, additionally, do SES, cultural linguistic differences, parents’ education, and so forth act as important early determinants to the larger outcome? And perhaps all of these characteristics are tied closely together. Silva et al. (1987) draws similar conclusions about the relationship with delayed language and reading. Of the groups with general language delay, 40-64% have reading disabilities noted within the various age groups, compared with 6-9%, for the various age groups, in the sample as a whole. Of the groups who exhibit general language delay, 52-56% are also classified by either parents or teachers as maladjusted, compared to 23-29% of the total sample. The Silva group did assess family disadvantage and find that those with general language delay do have a higher disadvantage score than the others. The “bottom line” is that language delay, linguistic variation, reading failure, problem behavior and social background factors seem to be related.
Cultural, racial, class, and even regional variation in speech influences literacy (Farkas, 1990); therefore an education campaign might help merge the gap. However, the difficulty would be in avoiding the interruption that this focus is an attack on speech variation based on race, class or region. Living in the South, it can be noticed that teachers are cautious about correcting the language style of Southern children. Doing so might result in hurting a child or angering the parents. However, if early linguistic variation does harm literacy development then perhaps the greater harm is by “dodging” the issue. Since the logistic way America “writes” and “spells” will not likely change a merge in linguistic patters could be one way to reduce literacy variation. It is acknowledged that some would interpret this as a form of cultural or racial suppression; but if the reality is that literacy is affected by linguistic patterns then at least this information should be made public so that remedies can be developed and gaps can be reduced. Currently it seems to be an issue that people would rather not deal.

Since the research suggest that the gap widens between the advantaged and disadvantaged children primarily during summer months disadvantaged kids could benefit from more time at school instead of less. Some jurisdictions are moving to year around schooling and find resources are better utilized and gaps in learning are less likely to occur. Also, those with behavioral problems are often expelled from school, resulting in even less time in the environment that might help them the most. Alternatives to expulsion are important to find. It is also not a surprise that this dissertation can not conclude with clear identifiable, easily attainable and proven guidelines for improving literacy. One would hope that if it existed it would already be implemented in order to lessen the negative associated social consequences. What has been established is that reading ability is embedded in the sociological fabric of a stratified society. Encouraging parents to attend more of their child’s
school functions will not likely result in better school performance by the child. The real answer is rooted in the embeddedness of a stratified structure. However, the family and its dynamics has an important place in determining success in America; and the knowledge about little “steps” that might make a difference in literacy should be aggressively disseminated.

While available research is often limited by sample size, age of the study and other methodological issues, enough evidence exists to claim that there are important links between reading failure and problem behavior. One can infer that frustration and aggression is fueled by reading failure. A few researchers have even linked reading problems directly to delinquency. This form of behavior may be more costly than general “problem behavior” because the consequences for the student could likely result in school expulsion and even incarceration, which can ultimately lead to further reduced opportunities. It should also be mentioned that in most of the studies regarding behavior problems, boys are more likely than girls to be identified. Here would be an appropriate place to expand even further on gender differences in regards to literacy, but it is beyond the scope of this research to further examine that issue. Briefly mentioned however, it is well established that boys are more likely to be more involved in crime and delinquency than are girls. It is also established that boys are more likely, than girls, to be identified as having reading disabilities. The connection is interesting to note.
APPENDIX C

Dependent Variable
Delinquency

Number of times last year that the child hurt someone badly enough to need bandages.

Number of times in the last year that the parents were brought to school because of the child’s bad behavior.

Number of times in the last year that the child skipped school without the parent’s permission.

Number of times in the last year that the child stayed out all night without parent permission.

Number of times in last year the child ran away from home.
APPENDIX D
Capital Scales

Reading Comprehension
Is the child’s Reading Comprehension in 1998. The birth cohort would have been ages 11 to 13 and evaluates the actual reading score of the child.

IQ
Is the child’s IQ score in 1992. The birth cohort would have been ages 5-7 during this survey year. This variable measures the intelligence level of the child.

Digit Span (Sequencing ability)
Is the child’s total standard score on the Digit Span assessment in 1996. The birth cohort would have been between the ages of 9-11 during this survey. This variable measures the sequencing ability of the child and is often used as an indicator of dyslexia.

Cultural Capital Scale
Each of the questions used to compute the cultural capital scale were asked of the children in 1998, the kids would have been ages 11 to 13 and evaluates the following: if the child has ‘musical instruments in home’, owns a computer, has family that reads the daily newspaper, receives special lessons, or is encouraged to participate in various hobbies.

Physical Capital Scale (Social Organization)
Each of the questions used to compute the physical capital/social organization scale were asked of the children in 2002, the kids would have been ages 15 to 17 and evaluates the following: ‘in neighborhood people don't respect laws", 'in neighborhood crime and violence are problems', 'in neighborhood there are abandoned buildings', 'in neighborhood there is not enough police', 'in neighborhood there are too many unsupervised kids', 'in neighborhood people don't care', 'in neighborhood people can not find jobs'.

Social Capital Scale
Each of the questions used to compute the social capital scale were asked of the children in 1998, the kids would have been ages 11 to 13. This scale measures the parent-child communication and mother-child bond and evaluates the following: 'how much tell parents about teachers', 'how much tell parents about how spend money', 'how much tell parents about who you are with', 'how often tell parents about whereabouts', 'how much tell parents about homework', 'how close child feels to mom'; 'how well mother and child share ideas';
Gender
In this study, zero equals female and one equals male.

Race
In this study, dummy variables are created with Hispanic and Black, with White as the reference category.

Mother’s Education
In this study, mother’s education is measured as a continuous variable asking the highest grade the mother has completed as of 1992.

Father Living in Home
In this study, zero equals no father living in the home and one represents the presence of the father.

Number of Kids in the Home
In this study, number of kids is measured as a continuous variable and represents the actual number of children in the home of the respondent.
BIBLIOGRAPHY


Smits, see web address section to follow.


Vygotsky-see websites reviewed below.


APPENDICES BIBLIOGRAPHY


Vygotsky—see websites reviewed.


Websites Reviewed and Agencies Contacted

American Management Association, 1601 Broadway, New York, NY 10019
212 586 8100
http://www.amanet.org

Bureau of Justice Statistics: http://www.ojp.usdj.gov/bjs/

Legislative Budget: http://lbfc.legis.state.pa.us

National Center on Education and the Economy, One Thomas Circle, NW Suite 700,
Washington, DC 20005- 202 783 3668 www.ncee.org

And http://www.nifl.gov/readers/introduction

Partnership for Reading: Collaboration efforts by the National Institute for Literacy, the National Institute of Child Health and Human Development and the U.S. Department of Education.
http://www.nifl.gov/partnershipforreading


The Institute on Race and Poverty: Research Advocacy of Education:
http://www.irpumn.org/website/

Vygotsky and Language Acquisition: http://www.sk.com.br/sk-vygot.html

The Washington Literacy Council: http://www.washingtonliteracycouncil.org
Additional Resources Reviewed


Dunn and Markwardt - see web page


